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Draft
General Management Plan Amendment
Environmental Assessment

East Unit

INDIANA DUNES

National Lakeshore • Indiana

97-017653

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Draft
General Management Plan Amendment
Environmental Assessment

January 1997

East Unit
INDIANA DUNES
National Lakeshore • Indiana

United States Department of the Interior • National Park Service

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PURPOSE AND NEED FOR THE PLAN

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INTRODUCTION

This *Draft General Management Plan Amendment / Environmental Assessment* for the East Unit of Indiana Dunes National Lakeshore will define management philosophy and goals for the East Unit of the national lakeshore and will serve as the framework for making decisions and solving problems for the next 20 years. This plan affects only the East Unit, including Pinhook Bog and the Heron Rookery.

This draft plan presents strategies for protecting and managing cultural and natural resources. It also indicates the general intent, function, and location of future facility developments and traffic-related safety issues.

This draft plan is needed to revise and update the management actions proposed in the 1980 *General Management Plan* for the East Unit in the national lakeshore. Some of the provisions of the 1980 plan have been successfully implemented; however, several key provisions are no longer considered feasible due to changes that have occurred during the past 16 years related to visitor needs, the characteristics of neighboring communities, and updated data about the natural and cultural resources of the lakeshore.

Developing this plan began in 1992 with meetings with professional planners, national lakeshore managers, and the general public to reaffirm the legislative purposes of the national lakeshore. At these meetings the national lakeshore's significant resources were reaffirmed, issues and concerns were determined, and goals were proposed for the lakeshore's future.

Based on ideas presented by the public and in the professional assessments, the planning team identified the feasible range of possibilities for management and use of the East Unit and developed alternative plans representing those different possibilities. The draft preliminary alternatives were presented for public review and comment in a workbook published in April 1994. Following that review and additional professional assessment, the alternatives were revised into the three alternatives that are more rigorously assessed in this draft plan.

This draft document was prepared for public review and comment. It provides a basis for comparing the management alternatives. Public input helped develop and shape the ideas contained in this document and will be instrumental in refining the final version of this plan for the East Unit.

This draft East Unit amendment will be combined with the approved *West Unit General Management Plan Amendment* (NPS 1993c) and the two together will constitute a revised general management plan for Indiana Dunes National Lakeshore. The amended plan will be the lead planning document for the national lakeshore.

Subsequent plans, plan updates, and implementation proposals will be based on the goals and philosophies described in the amended general management plan for the national lakeshore. These plans include the *Resource Management Plan, Fire Management Plan, Interpretive Plan,* and any site development plans for specific facilities.

This *Draft General Management Plan Amendment / Environmental Assessment* for the East Unit will be available for formal public review for 30 days. During this review period, the National Park Service will accept oral and written comments on the alternatives. The National Park Service will carefully review all comments and incorporate them, as appropriate, in the final *East Unit General Management Plan Amendment*. After approval, the plan will be implemented over the next 20 years as funding and other contingencies allow. Comments on the draft plan should be received no later than February 28, 1997, and should be sent to:

Superintendent
Indiana Dunes National Lakeshore
1100 N. Mineral Springs Road
Porter, Indiana 46304
(219) 926-7561

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BRIEF DESCRIPTION OF THE NATIONAL LAKESHORE

Indiana Dunes National Lakeshore is composed of several noncontiguous units. Most of the national lakeshore's land area is along the south shore of Lake Michigan between the urban centers of Gary and Michigan City, Indiana (see Region map). A variety of residential, commercial, and industrial developments abut the lakeshore boundaries, including several small communities, which are completely surrounded by national lakeshore land.

The lakeshore is separated into an East and a West Unit by a large industrial complex (see Location map). Pinhook Bog, the Heron Rookery, Hobart Prairie Grove, Calumet Prairie, and Hoosier Prairie are small, noncontiguous satellite areas with resources that differ from the lakefront lands. The roads through the national lakeshore serve visitors and local residents, as well as regional industrial and commercial users.

Biological diversity is one of the most significant features of the national lakeshore. This diversity is many times greater than that of most areas of similar size because Indiana Dunes is in several ecological transition zones, including where the northern conifers meet the temperate hardwood forests of the northern and eastern United States and the tallgrass prairies of the Midwest. This exceptional biological diversity was a primary reason for the national lakeshore's establishment.

Pinhook Bog, a national natural landmark, is a wetland ecosystem that contains an unusual array of plants, including several carnivorous species. Visitation is limited to guided tours along a boardwalk.

The Heron Rookery is a nesting area for great blue herons along the Little Calumet River. The trail that allows visitor access is built on the opposite bank from the heron colony's tree-top nesting site to protect the birds and resources. Anglers frequently use the trail to get to the river.

The national lakeshore has a variety of cultural resources including the Bailly Homestead and cemetery, Chellberg Farm, the World's Fair and Lustron houses, the Good Fellow Camp, and a number of restored South Shore Railroad cars.

LEGISLATIVE HISTORY

Congress designated Indiana Dunes National Lakeshore as a unit of the national park system on November 5, 1966 (Public Law 89-761) to

> preserve for the educational, inspirational and recreational use of the public certain portions of the Indiana Dunes and other areas of scenic, scientific, and historic interest and recreational value in the State of Indiana.

The act further states

> In order that the lakeshore shall be permanently preserved in its present state, no development or plan for the convenience of visitors shall be undertaken therein which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing or with the preservation of such historic sites and structures as the Secretary may designate: Provided, that the Secretary may provide for the public enjoyment and understanding of the unique natural, historic, and scientific features within the lakeshore by establishing such trails, observation points, and exhibits and providing such services as he may deem desirable for such public enjoyment and understanding: Provided further, That the Secretary may develop for appropriate public uses such portions of the lakeshore as he deems especially adaptable for such use.

Four subsequent legislative acts, PL 94-549 in 1976, PL 96-612 in 1980, PL 99-583 in 1986, and PL 102-430 in 1992, each amended the original establishing legislation and provided for the expansion of the national lakeshore to its current 15,139 acres.

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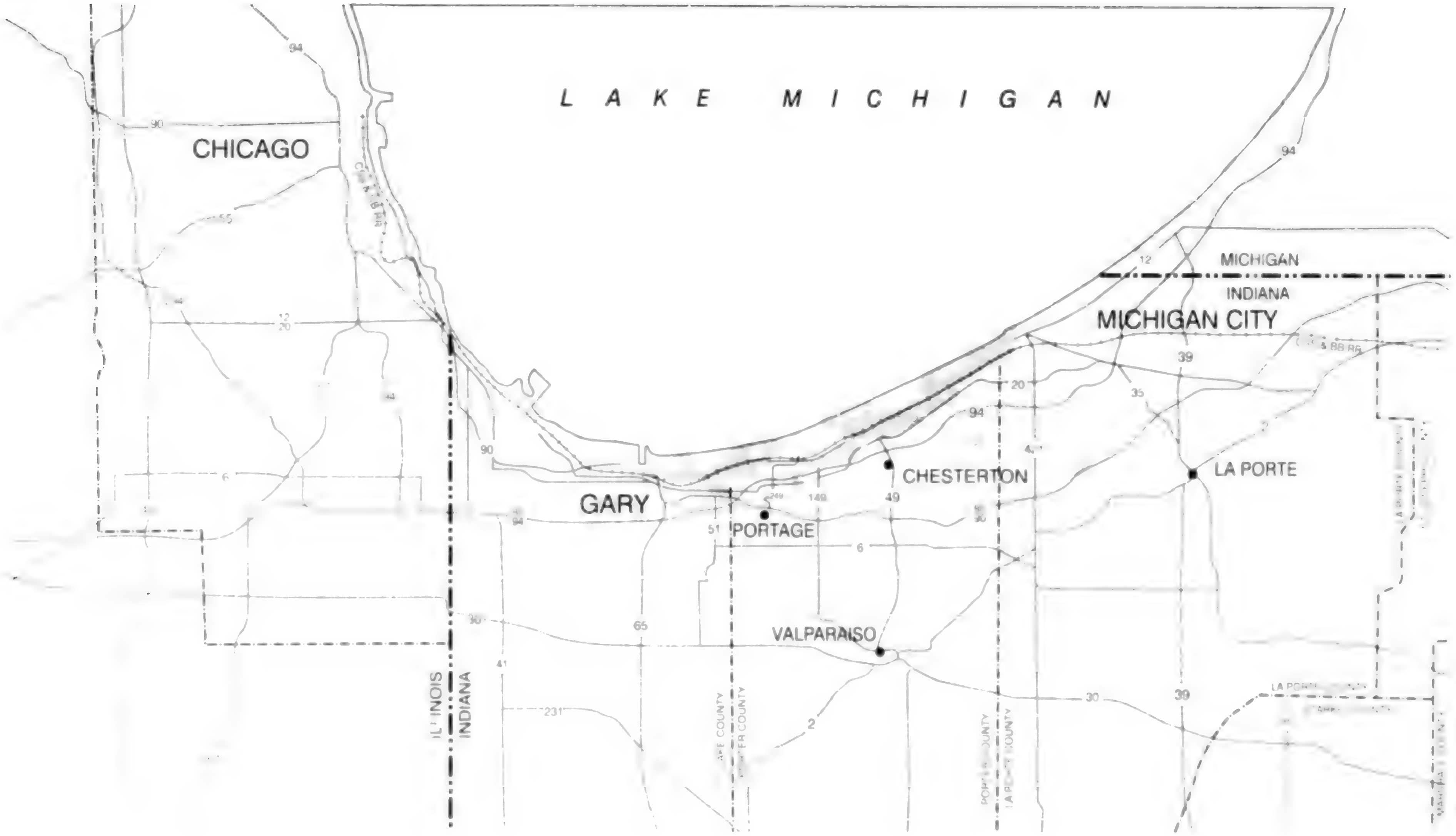

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INDIANA DUNES NATIONAL LAKESHORE

REGION

Indiana Dunes National Lakeshore
United States Department of the Interior
National Park Service
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PURPOSE AND SIGNIFICANCE OF THE NATIONAL LAKESHORE

The following purpose statements are based on the legislation that established the national lakeshore, the related legislative history, and subsequent supporting documentation.

Each alternative described in this document is consistent with the following purpose statements:

- Preserve, maintain, and restore the integrity and character of the natural resources and processes and protect cultural resource values at the lakeshore.
- Provide educational, inspirational, and recreational opportunities compatible with preserving natural and cultural resource values.
- Inspire in the public an appreciation of and a sense of personal stewardship for lakeshore resources.
- Interpret, encourage, and conduct scientific research in the tradition of pioneer investigators.

The following significance statements explain why the national lakeshore is important to our natural and cultural heritage. The special character and resource values of the East Unit of Indiana Dunes National Lakeshore must be protected to achieve the purposes of the national lakeshore.

- The lakeshore contains exceptional biological diversity and outstanding floral richness, resulting from the combination of complex geological processes and the convergence of several major North American life zones.
- The lakeshore's cultural resources represent the cultural evolution of northern Indiana from prehistoric times to the present day.
- The national lakeshore's extensive reach of undeveloped dunes provides recreational, educational, and inspirational opportunities within a one-hour drive of a major metropolitan area.
- The lakeshore offers outstanding opportunities for scientific research due to the diversity and complexity of its natural systems, and it provides a dynamic laboratory for early plant succession and faunal studies.
- The presence of heavy industry, long-standing transportation corridors, residential use areas, and natural areas at Indiana Dunes offers an outstanding opportunity to show visitors how these elements interrelate.
- The dunes provide a striking physical and emotional relief to the surrounding flat and highly developed landscape.

PRIMARY INTERPRETIVE THEMES

Primary interpretive themes are those ideas, concepts, and stories that are central to the nature and significance of the national lakeshore. Although other ideas may also be interpreted, the primary themes described below are the most important and will be prominently featured to visitors.

- Diversity — Lakeshore ecosystems support an exceptional diversity of plants and animals.
- People and the Land — People have lived in the dunes for thousands of years; each group adapted to and modified their environment. The current landscape reveals the effects of this cultural succession.
- Succession — Some of the earliest and most significant research on ecological succession was conducted early this century at the Indiana Dunes; succession is a major factor in creating the dune landscape.
- Great Lakes — Lake Michigan has been a major factor in shaping the landscape of the dunes. The present and future health of the Great Lakes is primarily a function of human activities.
- Conservation — Indiana Dunes National Lakeshore and Indiana Dunes State Park were created from a history of citizens' commitment to preserving the area's unique and sensitive landscape, plants, and animals; this commitment continues today.
- Science — For more than a century the Indiana dunes have been a focus of scientific research to understand, preserve, and restore the natural and cultural environment.

- Recreation — There are many year-round recreational opportunities in the dunes. Public support of low-impact and sustainable recreation is required to protect resources and ensure the continuing availability of resource-related recreational experiences.
- Geological History — The geology of the Indiana dunes was the result of the Wisconsin glacial advance and post-glacial period.

VISITOR EXPERIENCE GOALS

Visitor experience goals describe the experiences that the National Park Service wants to make available for visitors to the national lakeshore. These goals provide direction for facility, landscape, and media designers, as well as for lakeshore programs and management. All lakeshore divisions share responsibility for achieving these goals.

Visitors will

- have easy and safe access to recreational experiences and resources
- find services designed to accommodate and improve access for visitors with disabilities
- understand the significance of the lakeshore
- know about, appreciate, and support resource preservation, management, and restoration programs and goals
- experience the lakeshore in a variety of social settings, ranging from solitude to social or structured experiences
- relate the interpretive themes to visitors' backgrounds, age, learning styles, and interests
- obtain information about the national lakeshore and visitor services in and outside of the national lakeshore
- know that they are in a unit of the national park system
- know where they are and how to get to where they want to go (way finding)
- learn about and participate in low-impact recreational opportunities in and around the lakeshore, including opportunities in less-used areas and during seasons of low visitor use
- experience personal benefits such as relaxation, enjoyment, education, and inspiration
- demonstrate their interest in and commitment to the lakeshore by becoming involved in NPS programs such as volunteers in parks
- recognize and visit significant lakeshore landscapes, such as Lake Michigan, the lakeshore, wetlands, and dunes
- understand and appreciate the fragile and dynamic nature of dunes and other lakeshore habitats

GOALS AND DESIRED FUTURE CONDITIONS FOR THE EAST UNIT

The following goals for the East Unit describe what needs to be done to successfully achieve the purpose of the lakeshore in the East Unit.

- Preserve and protect the special values of the national lakeshore.
- Provide opportunities for visitors of diverse backgrounds and abilities to understand and enjoy what makes the lakeshore special.
- Work with lakeshore neighbors to achieve mutual goals and minimize impacts from visitation.

To accomplish the goals, certain resource conditions must be met. These are the desired future conditions for the national lakeshore.

- Native plant and animal communities and diversity are maintained and restored. (Examples of communities with the potential to be partially restored include relic prairies and remnants of the water and wetland systems of the Great Marsh.)
- Visitors can experience each of the East Unit ecosystems and observe active ecological processes.
- The lakeshore provides a range of interpretive and recreational opportunities consistent with resource values.
- The lakeshore offers uncrowded and undeveloped settings where visitors can enjoy the beach, forest, and wildflowers.
- Important cultural resources are protected; visitors can enjoy and learn about these resources and the stories behind them.

PLANNING ISSUES AND MANAGEMENT CONCERNS

Issues and concerns affecting this plan were identified from past NPS planning efforts, in meetings with national lakeshore managers and environmental groups, and from input from other state and federal agencies and the public. The major issues include threatened, endangered, and special concern species; floodplains and wetlands; air quality; historic and archeological resources; scenic values; visitor use; socioeconomics; access and circulation; and effects on national lakeshore operations.

BALANCING VISITOR USE AND RESOURCE PRESERVATION

The major obstacle to achieving the goals and desired future conditions for the East Unit of the national lakeshore is defining the proper balance between cultural and natural resource preservation, public education, and recreation, as described in the lakeshore's establishing legislation. This issue is intensified by the relatively small geographic area of the East Unit, the overlap of significant values, and the potential for interests of the lakeshore, local residents and communities, and nearby industries to conflict.

East Unit facilities, particularly parking areas, cannot accommodate all visitors during peak summer periods. To accommodate all visitors who desire easy access to East Unit beaches would conflict with other lakeshore goals, such as protecting resources, offering opportunities for solitude, and maintaining good relations with neighbors.

Preservation and maintenance of historic structures are the most pressing issues regarding cultural resources at Indiana Dunes National Lakeshore. Although several historic structures are now being used, others are vacant and would need to be rehabilitated before they could be safely and effectively reused.

Crescent Dune is one of the few areas of the East Unit from which visitors can see long stretches of the Lake Michigan shoreline. However, the Crescent Dune shoreline is already subject to erosion from a nearby breakwater structure. This shoreline erosion could become worse if visitor use increased in the area and vegetation was damaged or removed.

VISITOR SAFETY AND TRAFFIC

Relaxed and safe visitor movement in the East Unit is difficult due to the mix of land uses, diverse traffic, confusing intersections, and noncontiguous lakeshore areas.

Some area residents within national lakeshore boundaries complain that traffic in the East Unit is causing safety and maintenance problems, noise, and congestion in their communities.

Safety problems on U.S. 12 result from the mix of diverse traffic and from poor roadway design.

Unsafe vehicle access to the Pinhook Bog unit is the result of poor sight distance.

UNDERSTANDING LAKESHORE VALUES

Many visitors leave the lakeshore without understanding the its primary interpretive themes, making it difficult for them to appreciate the lakeshore's natural significance.

Given the variety of ways visitors can enter the national lakeshore and the lack of a formal entrance point, many visitors may receive little or no information about resources and recreational opportunities in the national lakeshore and the East Unit. Directional and informational signs in the East Unit are inadequate.

The potential for the National Park Service to provide environmental education opportunities to young people from neighboring and regional urban centers is not being fully realized at the national lakeshore.

RESOURCE RESTORATION AND PROTECTION

Natural habitats have been fragmented by roads and transmission, residential, industrial, and commercial land development in and around the East Unit, affecting the ability of some plants and animals (particularly rare species) to migrate to these habitats.

Harbors, jetties, revetments, and industrial complexes have interrupted the natural movement of sand along the Lake Michigan shoreline, accelerating shoreline erosion in critical areas.

Drainage ditches, land fill, and industrialization have significantly modified the natural movement of water above and below the surface of the ground, impairing wetland ecosystems.

Unauthorized entry and discharges from industrialized sources [illegible] Bay.

Some historic structures are in poor condition and some are threatened by erosion. Uses that are consistent with the purposes and goals of the lakeshore yet maintain their historic integrity must be identified for these resources.

NATIONAL LAKESHORE OPERATIONS AND STAFFING

Some maintenance operations at the East Unit are inefficient because they are dispersed among several locations within the national lakeshore.

The local scarcity of affordable housing available for short term lease makes it difficult for the national lakeshore to attract and retain seasonal employees. It is also difficult for the lakeshore to support research and other activities (such as volunteer programs) due to a lack of usable building space.

A personnel shortage already exists at Indiana Dunes National Lakeshore. There are 110.8 full time equivalent (FTE) personnel employed. Studies conducted using the resource management assessment program, the cultural resource management assessment program, and the visitor management/resource management assessment program assessed the national lakeshore's current mission, facilities, and operational responsibilities and compared them to the number of employees. These analyses conclude that there are 39.8 too few personnel to accomplish the lakeshore's mission.

RELATIONSHIP OF THIS PLANNING EFFORT TO OTHER PROJECTS

NPS PLANS

***West Unit General Management Plan Amendment* (NPS 1993c)**

The 1993 amendment updates the 1980 management plan for the West Unit of Indiana Dunes National Lakeshore. The West Unit plan addresses the management issues of access to West Beach, the location of the West Unit transit center and parking area, the use of a shuttle bus system, the impacts of national lakeshore traffic on nearby communities, the development of hiking and biking trails to connect subunits in the West Unit, boundary adjustments, and other development needs.

***U.S. 12 Scenic Road Feasibility Study* (NPS 1991b)**

This study determined the feasibility of establishing a parkway or scenic roadway ("Dunes Highway") managed by the National Park Service using the U.S. 12 highway corridor and portions of other roads in the national lakeshore area. The study presented three action alternatives and three management options for establishing the Dunes Highway scenic road. Each action alternative would establish a bike lane or path along or near the Dunes Highway, prohibit heavy trucks from using the scenic road, and reduce some speed limits.

***Little Calumet River Corridor Plan* (NPS 1991a)**

This plan addressed methods to connect the West and East Units of Indiana Dunes National Lakeshore. It provided for river access, parking, and recreational opportunities along the east branch of the Little Calumet River. The plan also addressed resource protection upstream along the Little Calumet River and Salt Creek.

***Fire Management Plan: Indiana Dunes National Lakeshore* (NPS 1992d)**

The plan describes the goals and policies of the fire management program at the national lakeshore. The fire management program attempts to replicate the role of fire in ecosystem dynamics while protecting the public. The plan also outlines a fire prevention plan and defines fire management units, and operational requirements for implementation.

***Resources Management Plan: Indiana Dunes National Lakeshore* (NPS 1995b)**

The *Resources Management Plan* details how both natural and cultural resources are managed in a multiyear program. It summarizes the current cultural and natural resource status and analyzes resource management needs and problems and ranks them in importance. The plan identifies and proposes needed scientific research to support management actions and identifies specific actions, including funding and staffing requirements, to accomplish resource management objectives.

The objectives of this plan are to ensure that natural and cultural resources, processes, and conditions are identified, inventoried, monitored, and protected.

***Land Protection Plan* (NPS 1995a)**

This plan determines the means of protection that will be used to achieve the purposes for which the national lakeshore was established. It identifies priorities for land acquisition and recommends protection alternatives. This plan is used to guide NPS land protection and acquisitions.

Indiana Dunes National Lakeshore Trail Plan (NPS 1984)

This plan provided a guide for trail development in the national lakeshore, as described conceptually in the 1980 *General Management Plan*. Some of the proposals in this plan have been accomplished, others have not yet been achieved but are still desirable, and some are no longer considered feasible or desirable because conditions have changed or because subsequent plans, such as the *Little Calumet River Corridor Plan*, have superseded them.

Long-Range Interpretive Plan

The National Park Service is preparing a long-range interpretive plan in conjunction with the *East Unit General Management Plan Amendment*. The interpretive plan will suggest interpretive themes and techniques to accomplish the NPS interpretive goals in the facilities called for in the *General Management Plan*.

NON-NPS PLANS

I-94 Interchange and Porter/ LaPorte County Line Road Improvements

The National Park Service has supported proposals by other parties to construct a new interchange at I-94 and Porter/La Porte County Line Road, improve County Line Road, and relocate U.S. 12 to the Woodlawn-Sheridan corridor. These actions would bypass lakeshore lands, reduce traffic loads on the existing U.S. 12 segment in the East Unit of the lakeshore, and ease traffic flows in and out of Michigan City.

Privately Operated Shuttle Service

The National Park Service in general supports a proposal made by a private party to operate a rail shuttle service connecting downtown Michigan City, Lighthouse Place, and Mt. Baldy in the national lakeshore using vintage interurban rail cars of the South Shore Line. The proposal includes a provision for a facility to exhibit restored cars. The project proposes that the national lakeshore enter into an agreement for the use of its restored cars for exhibit and for the shuttle service.

The proponents of this project believe that this proposal provides an opportunity to develop a cultural heritage tourism attraction, transportation to Mt. Baldy, and economic enhancement for Michigan City.

Beverly Shores Bike Path

The Town of Beverly Shores has proposed to construct a 4.5-mile bike bike trail. The path would extend north from the Calumet Trail (which runs along the Northern Indiana Public Service Company property between Dune Acres and Michigan City) along Broadway to Lake Front Drive. It would continue east along Lake Front Drive to Lake Shore County Road, then south along Lake Shore County Road to Beverly Drive, then west on Beverly Drive to Broadway. This path would be consistent with the trails system at the national lakeshore and with the proposed trails in this draft plan for the East Unit of the national lakeshore.

Trail Opportunity Plan for Northwest Indiana (1990)

The *Trail Opportunity Plan for Northwest Indiana* was prepared by the Northwest Indiana Regional Planning Commission. It synthesized the trail planning efforts of agencies (including Indiana Dunes National Lakeshore), communities, and recreational interest groups in Lake, Porter, and LaPorte Counties. It also proposed links between existing and potential recreational and natural areas to improve access and use.

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Regional Bikeway Plan for Northwest Indiana (1994)

The Regional Bikeways Plan for Northwest Indiana was prepared by the Northwest Indiana Regional Planning Commission as part of the planning for transportation enhancements under the Intermodal Surface Transportation Efficiency Act of 1991. This act placed a new emphasis on connectivity of multimodal transportation alternatives. The plan identifies trails for hiking and bicycling connections to places of work, schools, libraries, public transportation, and residential areas.

PROPOSED ACTION AND ALTERNATIVES

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Table 1. Summary of Alternatives

	Actions Common	Preferred Alternative	Alternative A	Alternative B
OVERVIEW	Provide a balanced [illegible] the diversity of national lakeshore resources and protecting these valued resources	Maximize both resource protection and the diversity of the visitor experience	Continue management direction set forth in 1980 *General Management Plan* and other approved plans with changes to reflect current conditions	Expand critical dunes nature preserve and dispersed visitor experience
NATURAL RESOURCE MANAGEMENT	■ Work cooperatively to [illegible] long-term [illegible] issues ■ Restore native [illegible] ■ Design and construct new facilities with minimal impact on natural resources ■ Remove 1900s-era [illegible] associated roads and driveways ■ Restore disturbed sites [illegible] native vegetation ■ Install culverts and [illegible] to improve water flow	■ Continue to protect and preserve the natural environment and ensure ecosystem integrity ■ Cooperate with local jurisdictions to restore wetlands ■ Remove some roads or barriers that fragment ecosystems ■ Restore habitats in the Great Marsh, Furnessville, Little Calumet River corridor, and other areas ■ Survey and mark Heron Rookery and Pinhook Bog boundaries ■ Continue existing research and resource management	■ Continue to protect and preserve natural resources; make them available to public ■ Seek to restore ecosystem to more natural conditions ■ Reestablish natural wetland and surface-water conditions where possible	■ Manage those areas of the state park compatible with the state park ■ Restore [illegible] between state park and national lakeshore as nature preserve is expanded ■ Fence Pinhook Bog to prevent unauthorized entry and vandalism

	Actions Common	Preferred Alternative	Alternative A	Alternative B
CULTURAL RESOURCE MANAGEMENT	■ Construct new facilities with sensitivity to cultural resources and comply with applicable laws and regulations. ■ Determine eligibility for inclusion on the National Register of Historic Places for all potentially eligible structures. ■ Document national register structures. ■ Offer structures that are not determined to be historically significant for sale and removal.	■ Preserve or adaptively use cultural resources depending on character and value.	■ Preserve, partially restore, relocate as necessary, and adaptively use cultural resources depending on character and value.	■ Use historic structures where feasible; otherwise, remove them.
Bailly Homestead and Chellberg Farm	■ Maintain existing structures of the Bailly Homestead and Chellberg Farm.	■ Develop Swedish Farming District to include Chellberg Farm and Bailly Homestead area.	■ Adaptively use structures for interpretive purposes.	■ Seek proposals to adaptively reuse structures through leases to a public institution.
World's Fair and Lustron Houses		■ Seek long-term leases for World's Fair houses from tenants who agree to restore and maintain them as historic structures; seek other options acceptable to the state historic preservation officer to [illegible] private sector. ■ Provide limited tours. ■ Relocate Rostone and Lustron Houses [illegible] ■ [illegible] national register [illegible] Lustron houses for national lakeshore purposes.	■ Relocate all the World's Fair houses to an area along Broadway. ■ Provide an architectural tour. ■ Use interiors for interpretation and national lakeshore operations. ■ Relocate Lustron house to an area along Broadway and offer as architectural tour in conjunction with World's Fair houses. ■ Adaptively use interiors of structures for national lakeshore operations.	■ Convey the World's Fair houses to a public institution or private party to relocate and rehabilitate outside national lakeshore boundaries, or document the structures and demolish them. ■ Convey national register structures to a public institution or private party to relocate and rehabilitate outside national lakeshore boundaries. ■ [illegible]

	Actions Common	**Preferred Alternative**	**Alternative A**	**Alternative B**
Good Fellow Camp	■ Use Good Fellow Camp site for overnight environmental education program.	■ Preserve historic camp features. ■ Rehabilitate and adaptively use lodge. ■ Rehabilitate and adaptively use additional existing structures.	■ Rehabilitate and adaptively use lodge only.	■ Remove all existing structures.
South Shore Railroad Cars	■ Loan South Shore Railroad cars not needed for interpretation at the national lakeshore to museums or other appropriate institutions. ■ Seek legislation or authority to transfer South Shore Railroad cars loaned to museums or institutions to those agencies.	■ Display one to three cars near the national lakeshore at a site associated with railroad history.	■ Restore up to five cars and maintain as exhibits.	■ No plans for use or exhibition of South Shore Railroad cars.
ACCESS AND CIRCULATION	■ Improve signs. ■ Enhance safety. ■ Conform with applicable laws and regulations for access to and use of national lakeshore facilities.			
U.S. 12	■ Reroute U.S. 12 near Michigan City (on Woodlawn and Sheridan Avenue) (action to be accomplished by other parties). ■ Implement safety improvements along U.S. 12.	■ Designate 11 miles as Dunes Highway (from east gate of Bethlehem Steel to Michigan City) to be managed by National Park Service.	■ No additional actions.	■ No additional actions.
Shuttle Services		■ As demand warrants, implement a trial shuttle service if and when needed for Lake View and Kemil Beach area and for the Mt. Baldy Central Beach area.	■ Develop interdunal scenic shuttle tour in eastern Beverly Shores.	■ No action.

	Actions Common	Preferred Alternative	Alternative A	Alternative B
Shoreline Access	■ Expand parking by 25-50 spaces and provide restrooms using [illegible] of use sites and other previously disturbed lands at Porter Beach	■ Continue existing access and expand parking at Rostone House and Mt. Baldy by 20-40 and 25-50 spaces respectively. ■ Provide new access at east end of Lake Front Drive picnic area (primarily for visitors with disabilities).	■ Continue existing access, provide new access west of Mt. Baldy.	■ Remove Kemil Beach parking and access facilities. ■ Provide new parking area and trailhead at Fairwater Dunes (25-50 spaces). ■ Expand Central Avenue and Mt. Baldy parking by 25-50 spaces and Rostone House parking by 20-40 spaces. ■ [illegible] access to Lake View [illegible] east [illegible]. ■ Provide two [illegible] overlooks with [illegible] spaces at each. ■ Provide new picnic facility with 25-50 spaces on Lake Front Drive.
Little Calumet River Access		■ Develop three river access sites (Howe Road, IN 49, and Brown Road) (fishing only).	■ Develop river access for fishing and canoeing (as described in the *Little Calumet River Corridor Plan*) (three fishing/canoe sites at Howe Road, IN 49, and Brown Road and one canoe landing at Bailly Homestead).	■ Develop three river access sites (Howe Road, IN 49, and Brown Road) (fishing only).
Boat-in Access		■ [illegible] boat-in access [illegible]	■ Continue existing boat-in beaches west of Dune Acres and at Crescent Dune.	■ Continue boat-in beach only west of Dune Acres.
Portage Boat Access		■ Relocate [illegible] parking areas [illegible]	■ Continue existing access.	■ Relocate access and parking area to site outside watershed.

	Actions Common	**Preferred Alternative**	**Alternative A**	**Alternative B**
Road Closures	■ Allow closures only on roads owned by the National Park Service or with approval of the local jurisdiction. ■ Close and restore roads not used for access or other designated uses (e.g., trails). ■ Use selected roads east and west of Beverly Shores "island" and north of Beverly Drive for hiking and/or bicycling trails.	■ Close Main Street, Howe, Teale, South State Park, Furnessville, Tremont, Hadenfeldt, Veden, and County Line Roads and Carolina Avenue to through traffic.	■ Close Mineral Springs and Howe Roads to through traffic.	■ Remove East State Park Road and western portions of Lake Front and Beverly Drives. ■ Use sections of existing roads east and west of Beverly Shores island for access and circulation to national lakeshore facilities.
ORIENTATION, INTERPRETATION, AND EDUCATION Overview, Visitor Centers, and Information Stations	■ Regardless of location, the name of the national lakeshore visitor center will be the Dorothy Buell Memorial Visitor Center. ■ Develop interpretive plans for the national lakeshore. ■ Improve orientation, directional, and information signs throughout the national lakeshore. ■ Develop new unstaffed outdoor orientation facilities at points of arrival throughout the national lakeshore. ■ Provide lakeshore-wide and site-based information at parking areas and trailheads.	■ Provide a new visitor center near the intersection of U.S. 12 and IN 49 (could be operated in cooperation with state park or others). ■ Provide new information station at Mt. Baldy. ■ Provide new information facility (wayside and highway pullout) along U.S. 12 near Bailly Cemetery. ■ Provide new information facility (wayside at Tremont picnic area).	■ Continue to provide visitor information and orientation at the existing visitor center and at the Bailly/Chellberg information station. ■ Provide outdoor interpretive exhibit at new beach facility west of Mt. Baldy. ■ Provide new interpretive facilities at Cowles Bog and Pinhook Bog.	■ Construct new visitor center at Crescent Dune. ■ Remove existing visitor center and replace with [illegible] ■ Continue use of the Bailly/Chellberg information station. ■ Provide new outdoor interpretive exhibit at Mt. Baldy.
Bailly Homestead/Chellberg Farm	■ Continue use of Bailly/Chellberg as interpretive area. ■ Continue use of Chellberg Farm buildings to interpret early 20th century farming. ■ Continue to use Bailly Homestead to interpret fur trading period.	■ Continue existing interpretive programs at Bailly Homestead and expand visitor opportunities. ■ Continue Chellberg living history farm programs and festivals and special events.	■ Continue current programs and festivals.	■ Reduce level of interpretive programs. ■ Discontinue festivals.

	Actions Common	Preferred Alternative	Alternative A	Alternative B
World's Fair Houses		■ Provide limited tours of the houses.	■ Provide architectural tours of the houses. ■ Use interiors for interpretive exhibits.	■ Develop a publication to interpret the history of the houses.
Environmental Education	■ Provide an overnight environmental education facility at the Good Fellow Camp site.	■ Convert a natural visitor center for this use (environmental education). ■ Expand environmental education opportunities at Mt. Baldy and east end of national lakeshore.	■ No additional actions.	■ No additional actions.
[illegible]		■ Develop exhibits and captions to interpret the [illegible] exhibit.	■ Develop exhibits and captions to interpret the [illegible] exhibit.	■ No plans to exhibit or interpret the [illegible].
VISITOR USE Trails	■ Maintain and improve new Dunewood Trace trail from the existing visitor center to the campground and [illegible] trail [illegible] Dune Park [illegible] trail [illegible]. ■ [illegible] Michigan City [illegible] trail [illegible] Michigan City. ■ [illegible] ■ [illegible] Beverly Shores [illegible] bike trail [illegible] Drive.	■ Construct new bike/hike trail [illegible] roads from Mt. Baldy to Lake Front Drive with other hiking trails to wetlands. ■ New accessible trails at Central Dune to a beach look platform near Porter beach and at Portage Bay. ■ Construct a new trailhead at site of [illegible] at Pollock Bay. ■ Provide hiking and cross-country trails on some selected roads south of Beverly Drive and east and west of the Beverly Shores island. ■ Provide parking area [illegible] trail into Red Maple Swamp [illegible] Beverly Drive.	■ Construct new trailhead at site of [illegible]. ■ Provide hiking and biking trails on some selected roads south of Beverly Drive and east and west of the Beverly Shores island.	■ Construct trails along abandoned roads west of the Beverly Shores island. ■ Develop an accessible marsh trail south of Beverly Drive and east of Broadway. ■ Construct new trailhead at Pollock Bay.

	Actions Common	Preferred Alternative	Alternative A	Alternative B
[illegible]	■ Continue Tremont and other existing picnic areas.	■ Construct picnic and overlook facility near east end of Lake Front Drive; parking for visitors with disabilities only, with primary use and access by hikers and bikers. ■ Provide a picnic area at new Furnessville trailhead.	■ Provide a picnic area at new Furnessville trailhead.	■ Construct picnic and overlook facility near east end of Lake Front Drive, provide parking for 25-50 cars. ■ Construct picnic area and trailhead at existing visitor center site.
Camping		■ Expand Dunewood Campground by up to 50 conventional RV or tent sites, no hookups. ■ Provide for group use at Good Fellow Camp when not needed for environmental education.	■ Expand to include RV loops with hookups and group and tent camping. ■ Connect to city water and sewer systems. ■ Provide concession-run camp store.	■ Continue current use levels.
Lakeshore Operations and Facilities	■ Remove Furnessville maintenance facility and [illegible] buildings at headquarters area. ■ Offer structures not needed for national lakeshore purposes for sale and removal; demolish and remove if not sold.	■ Work with the state to identify a location for the state park's maintenance facilities on nearby national lakeshore lands. ■ Remove the Coronado Lodge — offer for sale and removal or demolish if not sold; restore site. ■ Use Furnessville maintenance site for picnic area and trailhead.	■ Rehabilitate the Coronado Lodge and use for national lakeshore purposes. ■ Use Furnessville maintenance site for picnic area and trailhead.	■ Provide ranger residence at Pinhook Bog. ■ Remove Coronado Lodge and revegetate site. ■ Restore and revegetate Furnessville maintenance site.

ACTIONS COMMON TO ALL ALTERNATIVES

Several actions to accomplish lakeshore goals and resolve East Unit issues are the same for each of the three alternatives. These common actions are described in the following text and are not repeated in the individual alternatives.

NATURAL RESOURCE MANAGEMENT

The National Park Service would work cooperatively with the U.S. Army Corps of Engineers to reestablish a beach nourishment program to compensate for the effects of the Michigan City harbor structures on beach regeneration. This cooperative action would restore more natural accretion and erosion processes along the Lake Michigan shoreline and reduce the erosion rate of the foredunes of the East Unit.

A historic prescribed fire regime would be reestablished at the lakeshore. Fire management would be conducted as outlined in the lakeshore's approved *Fire Management Plan* (NPS 1992d).

New facilities would be planned, sited, and developed with sensitivity to natural and cultural resources and would comply with environmental laws.

The National Park Service would continue to establish cooperative relationships with other agencies and affected entities to define and resolve resource management issues.

Installing culverts or causeways through roadfills in wetlands and closing drainage ditches where possible would allow natural restoration of some wetlands and wetland vegetation.

Most of the sites of expired reservations of use and occupancy and other disturbed areas such as roads that are no longer needed would be restored to their former topography and planted with native vegetation. Some sites would be used to provide for visitor services such as trailhead parking areas.

CULTURAL RESOURCE MANAGEMENT

The National Park Service would ensure that cultural resources, such as archeological and historic sites, historic structures, and cultural landscapes, were afforded protection and maintenance as required by law.

The National Park Service would preserve or adaptively use cultural resources depending on their character and cultural value. Adaptive uses might include interpretive, educational, and arts programs, employee housing, or administrative functions. New facilities would be constructed with sensitivity to cultural resources.

Current management strategies for historic structures, archeological resources, and other cultural resources would continue. A comprehensive cultural resource database, which includes a list of the park's classified structures and an inventory of cultural landscapes, is being compiled for the lakeshore by the Great Lakes System Support Office. The Midwest Archeological Center is also in the process of completing a four-year field survey to estimate the number and distribution of archeological sites within the national lakeshore. Because there have been no ethnographic studies for the national lakeshore, an ethnographic overview and assessment would be done to provide a broad ethnographic database. Future development actions would be evaluated in relation to all these databases to determine the potential for impacts on historic resources.

Structures that are potentially eligible for listing on the National Register of Historic Places would be evaluated to determine if they were eligible. Eligible structures would be documented and placed on the List of Classified Structures. Use of eligible structures would be evaluated in consultation with the state historic preservation officer.

Current programs and uses at the Bailly Homestead and cemetery and Chellberg farm facilities would continue. The Bailly Homestead would continue to be used to interpret the fur-trading period and the story of Native Americans. The Chellberg Farm buildings would continue to be used to interpret and demonstrate early 20th century farming.

The Good Fellow Camp would be used to provide overnight environmental education programs.

The National Park Service would loan South Shore Railroad cars that are not needed for interpretation at the national lakeshore to museums or other appropriate institutions.

The National Park Service would seek legislation or other authority to transfer cars loaned to appropriate institutions to those agencies collections. This would allow for better care for the cars because many of the institutions are prohibited from spending funds on items that are not the property of the institution.

ACCESS AND CIRCULATION

The National Park Service would improve informational and directional signs within NPS jurisdiction and would work with other governmental agencies to improve signs outside NPS jurisdiction. Actions would include, but not be limited to: entrance exit signs on roadsides near the lakeshore boundary, directional signs, development identification signs, trailhead information waysides, and points of interest signs.

The National Park Service would work to enhance safety by improving intersections and other actions.

U.S. 12

The National Park Service would work with the city of Michigan City and the Indiana Department of Transportation to relocate U.S. 12 along Woodlawn and Sheridan Avenues. The relocation would eliminate two at-grade railroad crossings, permit the restoration of wetlands, and improve safety and access into Mt. Baldy. The relocation is part of Michigan City's plan to improve access to the city.

The National Park Service would also implement other intersection and safety improvements along U.S. 12.

Shoreline Access

Parking at Porter Beach would be expanded on NPS-owned former reservation of use sites by 25–50 spaces to accommodate more beach-oriented recreation in the East Unit. New restrooms would replace the portable toilets at Porter Beach.

Road Closures

The closure of roads would only occur on roads owned by the National Park Service or with the approval of the local jurisdiction.

ORIENTATION, INTERPRETATION, AND EDUCATION

An interpretive plan for the national lakeshore would be required to provide more details on interpretation and environmental education programs and developments.

Visitor Center and Information Stations

Regardless of location, the national lakeshore visitor center would be named The Dorothy Buell Memorial Visitor Center. Public Law 102-430 officially named the park visitor center.

New unstaffed orientation facilities would be developed at key points of interest. Parkwide and site-based information would be provided at parking areas and trailheads.

Bailly Homestead – Chellberg Farm

The national lakeshore would continue to use the Bailly–Chellberg information station. The Chellberg Farm buildings would continue to be used to interpret and demonstrate early 20th century

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farming. The Bailly Homestead would continue to be used to interpret the fur-trading period.

Environmental Education

The national lakeshore would provide an overnight environmental education facility at the Good Fellow Camp site. This would continue the historic use of this complex and provide additional interpretive opportunities.

VISITOR USE

Recreational Opportunities

The Furnessville maintenance area site would be used for a picnic area and trailhead.

Accessibility

Access to and use of national lakeshore facilities by disabled visitors would continue to be provided in conformance with applicable laws and regulations, specifically the Architectural Barriers Act of 1968 (PL 90-480), the Rehabilitation Act of 1973 (PL 93-112), and the Americans with Disabilities Act of 1990 (PL 101-336). Visitors with disabilities would be able to enjoy the national lakeshore and participate in recreational activities using the same facilities and programs as all other visitors, to the greatest extent possible, commensurate with their abilities. Sensitive planning and design would facilitate this goal. More specific accessibility considerations are discussed in each alternative.

Trails

The national lakeshore would cooperate with other parties to link the lakeshore trail system with regional trails and recreational facilities, as described in the *Little Calumet River Corridor Plan*.

A hiking/bicycle trail to connect the East and West Units of the national lakeshore would be built along U.S. 12, as described in the *Little Calumet River Corridor Plan*.

The National Park Service would maintain and improve the new Dunewood Trace, which connects the Dunewood Campground to the existing visitor center, the hiking-only extension of the LyCoKiWe trail system to Dune Park Station, and the new greenbelt loop addition to the Cowles Bog area trail system.

The National Park Service would cooperate with Porter County, Michigan City, and the state to upgrade and maintain the Calumet Trail and extend it to Michigan City.

The National Park Service would construct trails called for in the 1984 *Trail Plan*.

The National Park Service would cooperate with the Town of Beverly Shores to develop a hike/bike trail along Lake Front Drive.

Trailside exhibits (waysides) and/or brochures would be used to interpret the trails.

Picnicking

Picnic facilities at Tremont and other existing picnic areas would continue.

Miscellaneous Actions for National Lakeshore Operations and Facilities

The national lakeshore's roads and trails maintenance function would be relocated from Furnessville to the existing national lakeshore headquarters complex, where it would be consolidated with other maintenance and headquarters operations to improve efficiency and communications.

LAKESHORE OPERATIONS AND STAFFING

All existing management plans would continue unless they are specifically superseded by this

PREFERRED ALTERNATIVE: MAXIMIZE BOTH RESOURCE PROTECTION AND DIVERSITY OF THE VISITOR EXPERIENCE

The preferred alternative for the national lakeshore's East Unit would provide educational and recreational opportunities by preserving and providing access to uncrowded natural settings (see Preferred Alternative map). In these natural areas visitors could appreciate lakeshore habitats and understand the lakeshore's ecological processes and the need for resource protection. A strong effort would be made to maintain and restore native plant and animal communities and natural ecological diversity. The Great Marsh would be restored to the fullest extent possible.

Cultural resources would continue to be preserved and interpreted and, where appropriate, used for national lakeshore purposes.

The visitor experience would be enhanced in several ways, including designating a section of U.S. 12 as the Dunes Highway (managed by the National Park Service), building a new visitor center and a new information station, improving visitor orientation and resource interpretation, and expanding the Dunewood Campground.

NATURAL RESOURCE MANAGEMENT

The principal natural resource management objectives would be to continue to protect and preserve the natural environment and ensure ecosystem integrity while providing for visitor enjoyment.

Endangered and sensitive species would be protected and, where possible, restored to their natural ranges. Biological, geological, and other natural processes would be permitted to continue with minimal human interference. However, because natural resources are not free from human influences, some active management would be necessary to meet resource management objectives. Management of national lakeshore natural resources would include actions necessary to replicate and manage processes that shaped the resources. Examples include management-ignited prescribed fire, the removal of ditches and barriers to natural water flow, beach nourishment, and the removal of invasive exotic species.

The National Park Service would cooperate with local jurisdictions to restore wetlands by closing drainage ditches wherever feasible. Closing some drainage ditches would help restore areas of the Great Marsh. The National Park Service would cooperate with local jurisdictions to install culverts beneath some roadways or build causeways to elevate road sections that currently restrict surface water flows. This would help natural water regimes to operate without restriction.

The National Park Service would remove some roads or other barriers that separate or fragment ecosystem areas and restore the natural habitats in those areas. After reservations of use expire, roads not converted for hiking or biking trails would be removed and any disturbed areas would be restored to native vegetation.

The National Park Service would work to restore the habitats in the Great Marsh, Furnessville, Little Calumet River corridor and other areas. Habitats to be restored would include prairie, oak savannah, swamp forest, floodplain forest, and sedge meadow. Controlled burns would restore the role of fire in the ecosystems. Exotic species would be removed. Unnecessary roads would be removed or closed to through traffic including portions of Howe, Furnessville, Hadenfeldt, Veden, Carolina, and other roads.

Future development in the East Unit would be carefully planned to minimize disturbance to sensitive resource areas.

The Heron Rookery boundary would be surveyed and marked to discourage disturbance of nesting great blue herons. The Pinhook Bog boundary would also be surveyed and marked.

U.S. 12 / Dunes Highway

An 11-mile segment of U.S. 12, extending from the east gate of Bethlehem Steel to the national lakeshore boundary east of Mt. Baldy, would be designated as the Dunes Highway, as discussed in the *U.S. 12 Scenic Road Feasibility Study*. More details are discussed in appendix A.. The National Park Service would seek to acquire the right-of-way along the designated segment from the Indiana Department of Transportation (INDOT), thereby assuming responsibility for maintenance and law enforcement. Before the National Park Service accepts the right-of-way, the lakeshore's operations budget must be increased to provide funds for this new maintenance.

The National Park Service would seek congressional authorization to purchase from willing sellers land immediately bordering the roadway from Sheffield Avenue to Lake Shore County / [illegible] Road. Over time this would make this area of U.S. 12 visually consistent with other portions of the Dunes Highway.

Shuttle Services

Shuttle service would be provided on a trial basis to the Lake View and Kemil Beach areas near the middle of the East Unit and to the Mt. Baldy / Central Beach area at the east end of the East Unit, as demand warrants (see appendix B for further analysis).

Implementing a shuttle system on a trial basis would allow national lakeshore staff to experiment with different schedules and routes to find the most cost-effective arrangement.

Parking areas for the shuttle service would be developed on previously disturbed sites. Sites to be used would be identified in a development concept plan for shuttle service when the service is initiated, based upon type and location of shuttle operation.

Shoreline Access

Existing shoreline access points would continue. New or expanded shoreline access areas would be developed at the picnicking facility near the east end of Lake Front Drive, the Rostone House, and Mt. Baldy. Parking access for the picnicking facility at the end of Lake Front Drive would be restricted to handicapped visitors. Additional parking, on previously disturbed lands, at the Rostone site would add 20-30 spaces, and at Mt. Baldy would add 25-50 sites. These parking areas would also serve hikers and bicyclers.

To reduce congestion and improve safety, roads at the Mt. Baldy site would be improved by building a new entrance drive east of the existing entrance. This and related actions would be addressed in a separate site development plan.

Little Calumet River Access

Additional access for fishing would be provided. Canoe launch access would not be provided. Three river access sites (trailheads with 5–10 parking spaces and restrooms) as described in the *Little Calumet River Corridor Plan* would be provided at Howe Road, IN 149, and Boo Road.

Boat-in Access

Boat-in access to Lake Michigan beaches would continue to be permitted in the national lakeshore except at designated swimming areas.

Road Closures

Portions of roads not providing access or designated uses in the future would be closed and revegetated to reduce habitat fragmentation and restore native plant communities. These closures might require the cooperation and approval of other jurisdictions. Examples of roads (or portions of roads) that might be closed include, but would not be limited to, Carolina Avenue, Furnessville Road, Teale, Veden (200 East), Hadenfeldt (150 East), Tremont (100

World's Fair and Lustron Houses

Limited tours of these houses, consistent with lease agreements, would be provided.

Environmental Education

The existing visitor center would be converted to a day use environmental education center, primarily used for scheduled groups. The Paul H. Douglas Center for Environmental Education in the West Unit is too far for field trips for schools in Michigan City and other East Unit communities. This new function for the visitor center would expand East Unit educational resources. The visitor center would accommodate both indoor and outdoor components of East Unit environmental education programs by providing classroom space and being near appropriate outdoor opportunities.

Opportunities for environmental education would be expanded at the east end of the park and Mt. Baldy. A shelter at the information station would be available for group use for staging walks and for protection in inclement weather.

South Shore Railroad Cars

The National Park Service would develop exhibits and captions to interpret the cars on exhibit in or near the national lakeshore.

VISITOR USE

Recreational Opportunities

Recreational activities at the East Unit of the national lakeshore would include walking, picnicking, camping (without utility hookups), nature study, bicycling on paved paths or roads, swimming at designated beaches, sunbathing, horseback riding on designated trails in the Ly-co-ki-we trail system, cross country skiing, boating, and fishing.

No canoeing facilities would be developed, and the Little Calumet River would not be cleared of fallen trees to support this activity. The Little Calumet River within the East Unit is only marginally suited to canoeing, and leaving fallen trees and other vegetation would improve river habitat for fish and other aquatic life.

Trails

Trails between lakeshore facilities or attractions would be provided. The trails would be designed to provide access without adversely impacting resources. These trails would provide opportunities for visitors to hike rather than drive to their destinations. Waysides or brochures would interpret resources along new trails.

East End Trails. A trailhead would be built at Mt. Baldy for the Mt. Baldy trail and two new trails. One new accessible hiking trail would lead from Mt. Baldy to an overlook at Crescent Dune, an ideal spot for visitors to see and learn about development and preservation of dune lands. This new Crescent Dune trail would be designed to keep visitors off of vegetation that provides dune stability.

A new hiking/biking trail between Mt. Baldy and Lake Front Drive would be created largely by connecting existing roads or road traces. The trail would guide visitors through wooded dunes and other landscapes and plant communities. It would provide access to the new picnicking and Lake Michigan overlook at the east end of Lake Front Drive. It would also connect with a proposed new hike/bike trail along the length of Lake Front Drive, thereby providing a continuous connection from Mt. Baldy and, eventually, Michigan City to Kemil Beach. The National Park Service would work with the Town of Beverly Shores in the planning and design of the Lake Front Drive trail.

Other new, short hiking trails would lead to overlooks in the east dunes area, providing visitors with opportunities to enjoy dune and lakeshore views in uncrowded, undeveloped settings. These trails could be accessed from the hike/bike trail or by automobile via trailhead parking areas. Some hiking trails would lead to the tops of dunes.

site and removal. If that fails, the structure would be demolished. Following removal of the foundation, the site would be restored to its former topography and planted to native vegetation.

LAKESHORE OPERATIONS AND STAFFING

An analysis done by staff at the lakeshore indicates that implementation of this alternative would require 65.3 additional full-time equivalent (FTE) employees (which includes the personnel needed for common actions) and added annual base funding in the range of $2.2 million (1995 dollars). Full staffing under this alternative would total 215.9 FTE employees.

DEVELOPMENT COSTS

Development costs for this alternative would be $24.0 million. See appendix C for more details.

MITIGATION MEASURES OF THE PREFERRED ALTERNATIVE

In addition to the mitigations described in the "Actions Common to All Alternatives" section, the following mitigation measures have been developed to reduce the potential adverse effects of actions proposed in the preferred alternative.

Natural Resources

Air Quality. Increased parking lot capacity would be offset by the reduction of residential traffic as a result of the expiration and removal of reservations of use and occupancy.

Cultural Resources

Contingency plans for the Rostone and Florida Tropical Houses would be prepared in consultation with the state historic preservation officer and the Advisory Council on Historic Preservation to stabilize and relocate them to the south side of Lake Front Drive if they became threatened by beach erosion or rising lake levels. The stabilization and relocation plans would be implemented, with the understanding that the structures might not survive the move. The NPS Historic American Buildings Survey and Historic American Engineering Record Division has completed documentation of all World's Fair houses.

TABLE 2. 1980 *GENERAL MANAGEMENT PLAN* ACTIONS THAT WOULD NOT BE IMPLEMENTED UNDER THIS ALTERNATIVE

1980 *General Management Plan* Action	Reason for Not Implementing This Action
Establishing a transit shuttle system to connect the east and west ends of the national lakeshore and providing access to points of interest throughout the entire lakeshore from peripheral parking lots	The 1980 plan estimated costs for such a shuttle system at more than $6 million dollars; costs in 1996 would be considerably more. A study conducted in 1983 indicated that a national lakeshorewide transit system would not effectively serve the area intended because lakeshore facilities are widely dispersed, the need for shuttle service is limited to weekend and holiday peaks, and the National Park Service has not been able to identify a suitable large site for a staging area.
Developing an East Unit transit information center	The County Line Road site contains wetlands, which are now protected from disturbance under Executive Order 11990. The expense of such an extensive shuttle system is also an issue. Furthermore, the South Shore Railroad has been eliminating existing stops in the lakeshore vicinity (to increase ridership), including the proposed transit center site stop, which would further reduce demand for the shuttle.
Acquiring the community of Beverly Shores	Acquisition is no longer considered economically or politically feasible because of the residential growth of the area in the last 15 years. According to informal estimates, acquisition costs would be more than $65 million.
Developing [illegible]	Operation no longer appears to be economically viable.
Developing a new beach access facility at Lake Shore County Road	Shoreline erosion has eliminated beach at Lake Shore County Road and development would not be possible without the acquisition of Beverly Shores.

World's Fair and Lustron Houses

All the World's Fair houses would be relocated to sites along Broadway. An architectural tour would be provided, and interiors would be used for interpretation and other national lakeshore purposes.

The eligibility of the Lustron houses for inclusion on the National Register of Historic Places would be determined, as called for under "Actions Common to All Alternatives." If eligible, one or more Lustron house(s) would be relocated to a site along Broadway and included in the architectural tour of the World's Fair houses. The interior of the house(s) would be adaptively used for national lakeshore operations. The remaining Lustron houses and other structures would be sold for relocation off of NPS land. If not sold, they would be documented and demolished.

Once the World's Fair and Lustron Houses have been moved or removed, the house sites would be rehabilitated by restoring the natural topography and planting with native vegetation.

South Shore Railroad Cars

The National Park Service would restore up to five cars and maintain them as exhibits. The location for the exhibits would be determined at a later time. Cars not currently being exhibited would be offered for loan to qualified institutions for exhibition.

GENERAL DEVELOPMENT

Access and Circulation

The current system of highways and roads under state and local jurisdiction would continue to provide access to and through the East Unit of the lakeshore. There would continue to be multiple entrances to beaches and other activity areas.

The National Park Service would work to improve intersections along U.S. 12. Traffic management actions to reduce vehicle congestion and enhance traffic safety would continue under existing jurisdictions.

Shuttle Services

The interdunal scenic shuttle tour (proposed in the 1980 plan) would be developed east of Beverly Shores. This route would be created by connecting east-west road traces and existing roads such as Manor, Valley, and Hollywood Avenues, linking the Mt. Baldy area with Lake Front Drive. The shuttle tour would permit visitors, especially those with physical disabilities and others not capable of hiking through steep terrain, to explore the forested dunes and see Lake Michigan.

Shoreline and Beach Access

A new beach access would be constructed on previously disturbed lands west of Mt. Baldy. It would have a 25-50 car parking area, information station, and trailhead.

Little Calumet River Access

Four river access sites (three trailheads and one canoe landing) would be provided at IN 49, Boo Road, Howe Road, and Bailly Homestead, as described in the *Little Calumet River Corridor Plan*. The trailhead access sites would include 5-10 parking spaces and restrooms.

Boat-in Access

The National Park Service would continue existing boat-in beaches west of Dune Acres and at Crescent Dune.

Road Closures

Mineral Springs and Howe Roads would be closed to through traffic, and only local residents and emergency vehicles would be allowed.

ORIENTATION, INTERPRETATION, AND EDUCATION

Visitor Center

Visitors would get information, orientation, and interpretation at the existing visitor center, the existing Bailly/Chellberg information station (where existing use and interpretation would continue), a new information facility west of Mt. Baldy, a new interpretive facility near Cowles Bog, and a new information station at Pinhook Bog (where access to the bog by guided tours only would continue).

The existing visitor center be remodeled and enlarged to provide better use of the facility. The trail connections there would continue, and the office space for interpreters and a cooperating association outlet would remain.

A new information station and 25-50 car parking area would be constructed west of Mt. Baldy on previously disturbed land. This would provide information, orientation, and primary interpretation through wayside exhibits.

A new information station would be constructed near the Pinhook Bog trailhead. Access to the bog would be only by guided tours.

Bailly Homestead – Chellberg Farm

The National Park Service would continue the current interpretive programs and festivals at these sites.

World's Fair Houses

The National Park Service would provide audiovisual tours of the refurbished houses, and the interiors would be used for exhibits.

Environmental Education

The National Park Service would provide for successful environmental education programs at the Good Fellow Camp as described in "National Lakeshore-Wide Alternatives." No additional [illegible] would be undertaken.

South Shore Railroad Cars

The National Park Service would develop stations and operations to interpret the cars as exhibits in or near the national lakeshore.

VISITOR USE

Recreational Opportunities

In addition to the activities listed under the preferred alternative — walking, picnicking, nature study, bicycling on paved paths or roads, swimming at designated beaches, sunbathing, horseback riding on designated trails in the [illegible] trail system, boating, fishing, and cross-country skiing — group camping, RV camping (with hookups), and canoeing would be encouraged or supported.

Trails

Hiking trails would provide access to all areas of the national lakeshore and the main entrance of the state park.

The National Park Service would construct a new trailhead at the Furnessville maintenance area following relocation of the maintenance facility to headquarters. It would also provide hiking and biking trails on selected roads north of Beverly Drive east and west of the Beverly Shores island.

Picnicking

The National Park Service would provide a new picnic facility and trailhead at the Furnessville maintenance facility site.

Camping

The Dunewood Campground would be expanded to include an RV loop with hookups, group and tent camping, and a concession-run camp store. The expansion would be added when it became feasible to connect to city water and sewer systems.

Miscellaneous Actions for National Lakeshore Operations and Facilities

The [illegible] Lodge would be rehabilitated for use as a hostel or for other park purposes.

LAKESHORE OPERATIONS AND STAFFING

An analysis done by staff at the national lakeshore indicates that implementation of this alternative would require 57 additional full-time equivalency (FTE) employees (which includes the personnel needed for common actions) and added annual base funding in the range of $2 million (1995 dollars). Full staffing under this alternative would total 207.6 FTE employees.

DEVELOPMENT COSTS

Development costs for this alternative would be $27.5 million. The development costs do not include costs for actions called for in the 1980 *General Management Plan* that are no longer considered feasible. See appendix C for more details.

MITIGATION MEASURES FOR ALTERNATIVE A

Removing the World's Fair Houses from their current location would require further mitigation measures, which would be developed with the state historic preservation officer. Other mitigation measures would be as described in the "Mitigation Measures Common to All Alternatives" section.

ALTERNATIVE B: EXPAND CENTRAL DUNES NATURE PRESERVE AND DISPERSED VISITOR EXPERIENCE

Under alternative B the adjacent national lakeshore land would be managed compatibly with the Indiana Dunes State Park nature preserve to create a larger, contiguous natural preservation area and to restore a portion of the Great Marsh. New opportunities for visitors to explore natural settings would be provided.

Cultural resources would continue to be preserved and interpreted and, where appropriate, adaptively used for national lakeshore purposes.

Visitors could enjoy expanded recreational opportunities at selected sites in the East Unit. A new visitor center would be constructed overlooking the dunes and lakeshore at Crescent Dune. Lake Michigan overlooks and some new trails would be provided, and shoreline access would be improved. The Dunewood Campground would remain at its current capacity.

NATURAL RESOURCE MANAGEMENT

The land east of Indiana Dunes State Park would be managed compatibly with the state park nature preserve. East State Park Road would be removed, and the corridor would be recontoured and revegetated.

The National Park Service would work with the Indiana Department of Natural Resources to remove the fence between the state and federal preservation areas and mitigate the effects of its removal.

The National Park Service would manage the federal portion of the preserve area and would cooperate with the Indiana Department of Natural Resources and the town of Beverly Shores to maintain the greatest degree of biological diversity.

Pinhook Bog would be fenced to prevent unauthorized entry and vandalism.

CULTURAL RESOURCE MANAGEMENT

Bailly Homestead and Chellberg Farm

The existing structures at Bailly Homestead and Chellberg Farm would be maintained. A contract with a qualified institution would be sought for the preservation, maintenance, and limited interpretation of the homestead and farm.

World's Fair and Lustron Houses

The World's Fair and Lustron houses would be conveyed to a private institution or individual to relocate and rehabilitate on sites outside the national lakeshore boundary. If not successful, the structures would be demolished.

Good Fellow Camp

All existing structures would be removed to improve safety and reduce maintenance costs. A new lodge facility would be located nearer the Howe Road entrance. Support structures needed for the operation of the camp would be designed specifically for the required function.

South Shore Railroad Cars

There would be no plans for use or exhibition of the cars in the national lakeshore.

Other Historic Structures

Other historic structures would be used where feasible. Structures for which no feasible use could be found would be removed and the sites would be restored.

GENERAL DEVELOPMENT

Access and Circulation

New parking for shoreline access would compensate for the removal of the Kemil Beach parking and provide for visitor use in the eastern portion of the East Unit.

Shuttle Services

There would be no shuttle service provided to any site in the East Unit.

Shoreline Access

To reconnect, preserve, and restore the dunes and Great Marsh near the state nature preserve to the greatest extent possible, the Kemil Beach parking lot and restrooms would be removed. East State Park Road (between Lake Front Drive and U.S. 12), Lake Front Drive (from East State Park Road to the World's Fair houses), and Beverly Drive (between East State Park Road and West Derby Drive) would also be closed. To compensate for closing East State Park Road and the westernmost part of Lake Front Drive, West Derby Road would be extended to Lake Front Drive. West Derby Road would also provide access to the new Fairwater/Dunbar parking area and trailhead (described below). The parking lot and roadway sections not required for emergency access, maintenance, or residential access would be removed, and the disturbed areas would be revegetated and managed in conjunction with the state nature preserve.

A new 25-50 space parking area would be provided behind the foredune in the Fairwater/Dunbar area on previously disturbed, vacated roads and reservation of use sites. This parking would be used by hikers as well as beach visitors.

Parking at the Rostone site would be expanded by 10-20 spaces. The Central Beach parking lot would also be expanded by 25–50 spaces.

Access to Lake View would continue to be via Lake Front Drive, but only from the east.

Two or three Lake Michigan overlooks, each with 5–10 parking spaces and a few benches, would be provided on the north side of Lake Front Drive. These overlooks would be behind seawall or shoreline revetments between Montana and Drake Avenues and the Lake View facility. There would be no beach access from these overlooks.

A picnicking facility with views of the lake would be provided near the east end of Lake Front Drive. This facility would include 25–50 standard parking spaces.

Little Calumet River Access

Three river access sites would be provided at IN 149, Boo Road, Howe Road, and the Bailly Homestead, as described in the *Little Calumet River Corridor Plan*. These access sites would be for fishing access and trailheads for the Little Calumet River Trail. There would be no canoe access.

Boat-in Access

The boat-in beach west of Dune Acres would continue.

Road Closures

Some sections of existing roads would be used for vehicle circulation and as hiking/bicycle trails. This would occur as reservations of use expire north of Beverly Drive between East State Park Road and Mt. Baldy.

Portions of East State Park Road, Lake Front Drive, and Beverly Drive would be removed.

ORIENTATION, INTERPRETATION, AND EDUCATION

Visitors would get information, orientation, and interpretation at the new visitor center at Crescent Dune and the existing Bailly-Chellberg information station. There would also be a new outdoor information exhibit and a 25-50 space parking area at Mt. Baldy.

Visitor Center

A new visitor center would be built at Crescent Dune on a disturbed site, providing a view of the stretch of the Lake Michigan shoreline and dunes while preserving the fragile dunes in the foreground. Crescent Dune is the best location to discuss shoreline dynamics and the interaction between industrial development and natural resources. A development concept plan would be required for the visitor center facilities.

The current visitor center would be removed and replaced with a picnic area and trailhead. The remainder of the site would be restored.

A new outdoor information exhibit would be developed at Mt. Baldy.

Bailly Homestead and Chellberg Farm

The National Park Service would contract with a qualified institution for preservation and maintenance and a reduced level of interpretive programs.

The World's Fair and Lustron Houses

The National Park Service would develop a publication to interpret the history of the houses.

Environmental Education

The Good Fellow Camp would be developed for overnight environmental education programs. Facilities would be specifically designed to serve the needs of environmental education programs. A development concept plan would be prepared and assessed before development.

South Shore Railroad Cars

The National Park Service has no plans to exhibit or interpret the cars. Cars not currently loaned for exhibition would be offered to appropriate institutions for exhibition.

VISITOR USE

Trails

A new hiking trail system would be created using vacated road rights-of-way west of the Beverly Shores island, in keeping with the nature preserve emphasis of this alternative. The new Fairwater Dunbar parking area would serve as a trailhead for these trails, and the National Park Service would work with Indiana Dunes State Park to connect this trail system with their trails.

The National Park Service would also cooperate with Beverly Shores to create a short accessible marsh trail and 5-10 trailhead parking spaces on vacated roads south of Beverly Drive and east of Broadway.

Pinhook Bog Trails. A new trailhead and parking lot would be constructed at Pinhook Bog about 0.25 mile north of the existing parking area and outside the drainage of Pinhook Bog. The trail would be extended from the new parking lot to the existing trail.

Picnicking

A picnic and overlook facility would be constructed near the east end of Lake Front Drive. Parking would be provided for 25-50 cars on expired reservation of use sites and existing disturbed areas.

A new picnic facility would be constructed at the site of the existing visitor center using existing parking and restroom facilities.

Camping

The Dunewood Campground would continue to operate as it now does. No additional camping facilities would be provided.

Miscellaneous Actions for National Lakeshore Operations and Facilities

A ranger residence would be provided at Pinhook Bog to discourage vandalism and unauthorized entry. This residence would allow national lakeshore staff to better monitor use at this unit.

The Coronado Lodge would be removed and the site would be revegetated.

LAKESHORE OPERATIONS AND STAFFING

According to an analysis done by staff at the Lakeshore, implementing this alternative would require 50 additional full-time equivalent (FTE) employees (which includes the personnel needed for common actions) and added annual base funding in the range of $1.7 million (1995 dollars). Full staffing under this alternative would total 202.6 FTE employees.

DEVELOPMENT COSTS

Development costs for this alternative would be $23.5 million. See appendix C for more details.

MITIGATION MEASURES FOR ALTERNATIVE B

Mitigation measures would be as described in the "Actions Common to All Alternatives" section.

ACTIONS CONSIDERED BUT REJECTED

Some of the alternatives presented to the public were entirely rejected. Originally, five alternative concepts were developed for managing the East Unit. These were presented to the public at an open house, discussed with interested local groups, and published in a workbook synopsis that was sent to everyone on the lakeshore's mailing list. As a result of the public involvement and further analysis, some of the actions in the alternatives were modified or dropped entirely. The remainder were consolidated into the three alternatives presented in this document. The actions that were dropped are described below.

LAKESHORE ACCESS AND TRANSPORTATION

The action that would have designated a shorter portion of U.S. 12 (from the east gate of Bethlehem Steel to Lake Shore County Road) as the Dunes Highway was rejected because the Indiana Department of Transportation considered it unsafe.

A new beach facility was suggested for Crescent Dune at the east end of the national lakeshore. The facility would have included restrooms, a snack bar, a picnic area, a lifeguard station, and parking for 200-300 cars. It would also have included a pedestrian access route from Michigan City. This facility was dropped from consideration because of the highly eroding nature of the beach at Crescent Dune.

SCENIC AUTO TOUR ROUTE

The scenic auto tour route was dropped from consideration because of the environmental impacts of developing a road in the area. A hike/bike trail would allow visitor access to the area and could be developed with less impact.

AFFECTED ENVIRONMENT

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INTRODUCTION

Indiana Dunes National Lakeshore is in the northwestern Indiana industrial-urban complex. It is bordered by heavy industries, including steel mills and power plants. The communities of Michigan City, The Pines, Beverly Shores, Chesterton, Porter, Dune Acres, Burns Harbor, and Portage are in or adjacent to the East Unit of the national lakeshore. There is a mix of land uses in the region, including heavy and light industries, residences, commercial areas, farms, and parks. The national lakeshore protects natural wetlands, dune bluffs and ridges, successional vegetation, climax oak forests, and beaches. A system of local, county, state, and interstate roads traverse the Lakeshore to serve the local residential population, industries, and lakeshore visitors. Commuter and freight railroads travel the length of the lakeshore.

The East Unit is bounded on the west by Bethlehem Steel, Northern Indiana Public Service Company's (NIPSCO) Bailly Generating Station, and the Port of Indiana. At the east end of the East Unit are another NIPSCO generating station and Michigan City.

The park headquarters, Dorothy Buell Memorial Visitor Center, Good Fellow Camp, Chellberg Farm and Bailly Homestead are all in the East Unit. Recreation facilities include the Dunewood Campground (the only camping facility in the national lakeshore), various trails, beaches and several beach access developments, the Little Calumet River, the U.S. 12 scenic road corridor, and Mt. Baldy. Lakeshore maintenance facilities are also in the East Unit.

Natural resources in the East Unit include the park's extensive wetland areas (Cowles Bog) and the detached areas of Pinhook Bog and the Heron Rookery.

Five houses from the 1933-34 Chicago World's Fair Century of Progress Exhibition are on Lake Front Drive. These houses are listed on the National Register of Historic Places. The National Park Service also owns a number of vintage South Shore Railroad cars from the last interurban electric railroad in the United States. These cars have been restored, and some have been loaned to museums

NATURAL ENVIRONMENT

CLIMATE

The East Unit of Indiana Dunes National Lakeshore is cold and snowy in winter and warm in summer. The average winter temperature is 27°F, with a typical daily minimum temperature of about 19°F. Summer temperatures are cooler than the inland portions of both Porter and LaPorte Counties because of the influence of Lake Michigan. Summer temperatures normally average about 71°F, with an average daily maximum temperature of about 82°F. The sun shines about 70% of the time during the summer and about 45% of the time during the winter.

Precipitation is well distributed throughout the year. Annual precipitation averages about 40 inches. Thunderstorms occur on about 45 days each summer.

The prevailing wind is from the southwest. The strongest winds, usually in March, average about 12 miles per hour. The average relative humidity at midday is about 65%; the percentage is higher at night.

ECOSYSTEM INTEGRITY

The East Unit of Indiana Dunes is surrounded by major transportation corridors, heavy industry, municipalities, farms, and residences. These developments have impacted the national lakeshore in various ways. Wetland and drainage regimes have been altered. Access roads and parking areas have created barriers which have disrupted natural processes and resulted in ecosystem fragmentation.

The National Park Service protects the natural communities or systems within its boundaries but has little control over those outside its boundaries.

Biological diversity is one of the most significant features of the East Unit. This diversity is many times greater than that of most areas of similar size because Indiana Dunes lies in several ecological transition zones, including where northern conifers meet the temperate hardwood forests of the northern and eastern United States as well as the tallgrass prairie of the Midwest. This exceptional biological diversity was a primary reason for the national lakeshore's establishment.

Natural flows of organisms, energy, water, and nutrients are critical to ecosystem health. Ecosystem fragmentation disrupts the flow of energy (food) and the movement of species and reduces species diversity. Larger blocks of natural habitat maintain biodiversity better than smaller ones. Large areas or connected small areas provide adequate habitat to sustain species and protect them from natural or human-caused disturbances such as disease or invasion by exotic species.

DUNE / SHORELINE ECOSYSTEM

The dunes / shoreline ecosystem extends from the lake bottom to the beaches, dunes, and wetlands. This area is constantly changing in response to natural and artificial forces, and all interactions are not completely understood. The actions of wind, water, humans, vegetation, and wildlife all contribute to changes.

A series of dune ridges that rise from the shoreline represent at least four Lake Michigan dune succession stages, including (1) the present dune formation, (2) the Tolleston dunes, (3) the Calumet dune formation, and (4) the Glenwood dunes.

The older, upland dunes (Calumet and Glenwood) are characterized by a stable oak forest. The younger dune shoreline area is still active, and all stages of plant succession can be observed there, including open beaches, grass-covered dune ridges, blowouts, dunes with woody shrub vegetation, pine forested dunes, and oak-forested dunes.

Waves, ice, lake currents, storms, and wind continually reshape beaches, dune faces, and the shoreline throughout the year. High-energy waves and strong wind in winter create a narrow, steep beach covered with coarse sand and gravel. During the summer smaller waves and gentler wind produce a broader, slightly sloping beach covered with finer sand.

This dynamic and fragile ecosystem can be easily altered or destroyed by off-road vehicles or trampling. Plants such as marram and other dune grasses help stabilize the dunes. As people create footpaths in the dunes, disturbing the covering plant layer, the wind picks up sand and redistributes it. Blowouts and depressions in the dunes occur where large volumes of sand have been stripped of vegetation, where sand has been removed, or when dune landscape structure has been altered.

The north boundary of the East Unit includes about 12 miles of Lake Michigan shoreline. Immediately inland sand dunes rise in a series of ridges, blowouts, and valleys. The highest dune in the area is Mt. Tom, which is in Indiana Dunes State Park and is 192 feet tall. Extensive wetlands fill the depressions between dune ridges. With the exception of a riprap revetment constructed to halt shoreline erosion at Beverly Shores and a breakwater along a portion of Crescent Dune, the East Unit retains much of its natural character. Outside the national lakeshore, however, the shoreline has been drastically altered by the construction of harbors, breakwaters, riprap, and industrial complexes, which have interrupted the littoral drift (on shore sand movement) in the lakeshore; this littoral drift is needed for beach replenishment. The beaches accumulate sand on the upcurrent side of these artificial structures, and sand starvation occurs downcurrent of the structures, resulting in erosion in areas such as Crescent Dune and Mt. Baldy. Natural beach replenishment has effectively been halted as a result.

SOILS AND TOPOGRAPHY

The East Unit of the lakeshore is a sand plain with many dunes interspersed with areas of low, wet flats. Topographical relief varies almost 200 feet from lakeshore to dune tops. The lowest elevation is at the Lake Michigan shoreline at 585 feet above sea level. Mt. Baldy is 706 feet above sea level. The Heron Rookery is in a relatively flat, former lake bottom with an elevation around 645 feet above sea level. Pinhook Bog is relatively flat Valparaiso Moraine topography with an elevation of 820 to 850 feet above sea level.

Water, wind, plant and animal communities, and human activities are all elements in the geomorphology of the dunes area, but glaciation is responsible for most of the current landform and drainage patterns. Glaciers alternately retreated and advanced until about 11,000 years ago, when moraines of glacial till and outwash materials were deposited.

The silt, sand, and clay sediments found at Indiana Dunes National Lakeshore are of the Pleistocene and Holocene ages and overlie Antrim shale of Devonian age. The underlying bedrock consists of limestone, dolomite, sandstone, and shale of the Paleozoic age.

Many fluctuations and a general lowering of the water level of Lake Michigan have created as many as seven successive lake shorelines, including beach, dune, and wetland areas.

Oakville-Maumee-Brems soils are the most common in the East Unit. These soils are nearly level to very steep. They are excessively to poorly drained sandy soils on outwash plains, lake plains, beach ridges, and sand dunes. These sandy soils are highly permeable and do not filter well, making them generally unsuited for sanitary facilities and building site development. These soils are best suited to trees; when cleared they are susceptible to wind erosion. Their sandy nature drains available moisture from seedlings and makes it difficult for seedlings to reestablish. The loose sandy soils also make it difficult to access the planting areas with equipment.

Whitaker-Milford-Del Rey soils are nearly level, poorly drained loamy and silty soils, generally found on lake plains, terraces, and outwash plains. When drained, as most of these soils have been, they are suited to crops. In their natural state they are more suited to water-tolerant trees. Wetness and low permeability make these soils unsuitable for sanitary facilities and building sites. They are not particularly susceptible to erosion.

Morley-Blount-Pewamo soils are nearly level to steep well to poorly drained silty soils found on till plains and moraines. These soils are suited to a variety of uses when nearly level. They are unsuitable for access and road development, sanitary facilities, and building developments, mainly due to low permeability but also due to steep slopes and ponding problems. They are not particularly susceptible to erosion.

Houghton-Adrian-Palms soils are nearly level very poorly drained organic soils in bogs and on [illegible]. They are generally found on till plains, lake plains, outwash plains, and moraines. Some of this soil unit has been cleared, drained, and used for crops. Its natural state is suited to water-tolerant trees and shrubs and wetland vegetation. Flooding and wetness limit the use of these soils. Their use for farming is further limited by their susceptibility to wind erosion. These soils are not suitable for sanitary facilities and building sites due to ponding and potential for poor foundations.

PRIME OR UNIQUE FARMLAND

Of all the soils in the national lakeshore, about [illegible] acres of soils are classed by the Natural Resources Conservation Service as prime or unique farmland. Prime or unique farmland is defined as farmland suited for growing general or specialty crops. Prime farmland produces general crops such as common [illegible]; unique farmland produces specialty crops such as fruits, vegetables, and nuts.

No prime or unique farmland has been identified in the LaPorte County portion of Indiana Dunes National Lakeshore. There are 16 soil units classed as prime or unique in Porter County, and five of these 16 occur in the East Unit of the national lakeshore, including Hanna sandy loam on 2% – 8% slopes, Martinsville loam on 0% – 2% slopes, Martinsville silt loam on 2% – 6% slopes, Morley silt loam on 2% – 6% slopes – eroded, and Rawson loam on 0% – 2% slopes.

Most of the 310 acres of prime or unique soils in the East Unit are in the area immediately southeast of the Bethlehem Steel mill and south of U.S. 12. There are 300 acres of prime or unique soil in the area of the Swedish farming district, which includes portions of Chellberg Farm, Bailly Homestead, Good Fellow Camp, and Coronado Lodge. The remaining 10 acres are adjacent to U.S. 20, about 1 mile southeast of Furnessville. The 310 acres of prime or unique soils represent 3% to 4% of the total land in the East Unit.

VEGETATION

The Indiana Dunes area has remarkably rich flora. Nearly 1,450 species of vascular plants have been identified in the Indiana Dunes area. There are more than 1,180 species of native plants and nearly 290 exotic or nonnative plant species in the lakeshore. Once established, exotic plants can severely alter natural succession, and many of these exotic plants threaten the ecology of the dunes.

Dune communities, morainic communities, and wetlands compose the major vegetation classifications. These three major classifications are subdivided into 14 specific community types (see appendix C for descriptions).

These major dune community classifications include the sand / barren ground / unvegetated blowouts, the foredune, the sand prairie, the wooded dunes, and the disturbed dunes.

Morainic communities include morainic forest and morainic shrubland.

Wetlands include wet swamp forest, floodplain forest, wet savanna, marsh, sedge meadows, aquatic, and fen type.

WILDLIFE

More than 300 species of birds have been identified in the national lakeshore. Selected common resident species include mallard, blue jay, American crow, great horned owl, song sparrow, ring-billed gull house finch, and northern cardinal. Summer breeding species include pied-billed grebe, red-shouldered hawk, sora, Acadian flycatcher, yellow-billed cuckoo, and chestnut-sided warbler.

The national lakeshore is a focal point for migrating avian species. Spring and fall migrants include numerous waterfowl species, olive-sided flycatcher, Swainson's thrush, solitary vireo, Cape May warbler, bay-breasted warbler, and many other species.

During spring the Lake Michigan shoreline channels numerous migrating raptor species through the East Unit along the dune ridge tops. About a dozen raptor species, including red-tailed hawks, bald eagles, peregrine falcons, sharp-shinned hawks, American kestrels, and turkey vultures, take advantage of uplifting south breezes on their northward journey. Thousands of migrating raptors have been identified and counted annually by volunteer hawk watchers near Porter Beach.

Most mammals have relatively stable populations. They include white-tailed deer, woodchuck, coyote, red fox, red squirrel, eastern gray squirrel, beaver, striped skunk, eastern chipmunk, muskrat, meadow vole, eastern cottontail, and white-footed mouse.

Reptiles and amphibians include garter and ribbon snakes, eastern hognose snake, bullsnake, common snapping turtle, eastern box turtle, Fowler's toad, northern leopard frog, western slender glass lizard, eastern newt, and red-backed salamander.

The Little Calumet River is a major stream in and adjacent to the East Unit. All major game fish in this stream are exotic. Important fish species include rainbow trout (steelhead), brown trout, coho salmon, and chinook salmon. The Indiana Department of Natural Resources annually stocks juvenile steelhead and salmon. The brown trout are a naturally producing, self-sustaining population. Nongame fish species include white sucker, carp, creek chub, Johnny darter, blunt-nose minnow, and green sunfish.

THREATENED AND ENDANGERED SPECIES

Four species that are found or known to occur in LaPorte and Porter Counties (and possibly in the East Unit of the lakeshore) are federally listed as endangered or threatened and are protected under the Endangered Species Act of 1973, as amended. The Indiana bat (*Myotis sodalis*), Mitchell's satyr butterfly (*Neonympha mitchellii*), and Karner blue butterfly (*Lycaeides melissa samuelis*) are federally listed as endangered; Pitcher's thistle (*Cirsium pitcheri*) is federally listed as threatened.

Large populations of the Indiana bat are found in three states, including Indiana. Most Indiana bats migrate seasonally between hibernacula (where the Indiana bat spends the winter) and summer roosts. None are known to hibernate or roost in the Indiana Dunes.

The Karner blue butterfly has a discontinuous distribution, and its historic range included eight populations in nine states and Ontario, Canada. Although six known sites are in the West Unit of Indiana Dunes National Lakeshore, no populations are known in the East Unit. The Karner blue butterfly is found in oak savannas and jack pine ecosystems with large, scattered patches of wild lupine. Wild lupine is the sole larval host food plant.

Mitchell's satyr butterfly is one of the most geographically restricted butterflies on the continent. Mitchell's satyr is found in fen habitat, an uncommon wetland characterized by calcareous soils and fed from springs and seeps of carbonate-rich water. Mitchell's satyr is known to exist in 15 sites in northeastern Indiana and southern Michigan, but it is not known to exist in the national lakeshore.

Pitcher's thistle inhabits beaches and grassland dunes. It can be found in many nonforested areas of the dune system, but it is most frequently found in the near-shore plant communities. Most Pitcher's thistle sites are along the shores of Lake Michigan, and only 8 of 11 historical populations are known to exist today. Six of these are in Indiana Dunes National Lakeshore. The survival of the Pitcher's thistle depends on a mosaic of open sites in the landscape.

A category 2 designation indicates that the U.S. Fish and Wildlife Service currently has no conclusive data on the biological vulnerability of a species. Several species that might inhabit the East Unit of the national lakeshore are listed as category 2 by the U.S. Fish and Wildlife Service. The loggerhead shrike (*Lanius ludovicianus*) is a very rare migrant that uses brushy fencerows and old fields. The black tern (*Chlidonias niger*) is a rare migrant of lakes and freshwater marshes. The cerulean warbler (*Dendroica cerulea*) is a neotropical migrant and a summer resident of swamps, bottomlands, and mixed woodlands near water. The eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) is a very rare resident of wetlands and fens. Blanding's turtle (*Emydoidea blandingii*) is a rare resident of prairie ponds and sedge meadows. The royal catchfly (*Silene regia*) is a prairie plant and the sticky goldenrod (*Solidago [illegible]*) is a rare marsh plant. Aromatic sumac (*Rhus aromatica arenaria*) is a dune shrub. Other species include bog bluegrass (*Poa paludigena*), butternut (*Juglans cinerea*), [illegible] (*Solidago racemosa gillmanii*), [illegible] (*[illegible]*), Hall's sedge (*Carex hallii*), and Wolf's spike rush (*Eleocharis wolfii*).

The park's list has also identified a number of category 2, endangered, and threatened species across the East Unit of Indiana Dunes National Lakeshore (see appendix D).

WATER RESOURCES

The major surface water resource in the East Unit is Lake Michigan. Other water resources include the Little Calumet River, interdunal ponds, scattered wetlands, Cowles and Pinhook Bogs, and Dunes Creek. Many of the drainage patterns in and surrounding the East Unit have been altered by channelization, filling wetlands, ditching, and dikes. These alterations were made for the agricultural and industrial development of the area.

The national lakeshore overlies an extensive groundwater reservoir. The general groundwater gradient is toward Lake Michigan, and gradients are very localized in the lakeshore and surrounding areas. The groundwater table varies from 0 to 45 feet below the surface.

FLOODPLAINS AND WETLANDS

There are few floodplains in the East Unit because of the lack of surface drainages and streams. The 100-year floodplains identified by the Federal Emergency Management Agency in the East Unit generally follow the Little Calumet River and its tributaries. The Little Calumet River floodplain extends from the river's confluence with Salt Creek (1.5 miles east of the Portage Burns Waterway) eastward for about 8.5 miles, leaving the lakeshore where the river crosses U.S. 20 in the eastern portion of the East Unit. In this area the Little Calumet River's 100-year floodplain ranges from 400 feet to 1,800 feet wide. The floodplain enters the lakeshore once more where the river flows past the Heron Rookery. At the rookery site, the floodplain ranges up to 4,000 feet wide. Along its tributaries it averages about 500 feet wide.

Wetlands have been identified by the National Wetlands Inventory throughout the East Unit. Wetlands include ponds, marshes, swamps, pannes, and bogs. Variations in water levels seasonally and annually may affect wetlands. Many wetland systems delineated in the national lakeshore are palustrine, riverine, and lacustrine.

Historically, wetlands in the national lakeshore were more prominent. Surface ditching, stream channelization, and road construction have caused or altered many wetlands. The alteration of surface drainage and hydrological regimes through human action could change the distribution of wetland plants in the national lakeshore, compromising threatened and endangered species.

Pinhook Bog is a closed water body with no outlet, creating a bog wetland with unique vegetation. Both Pinhook and Cowles Bogs are listed on the National Registry of Natural Landmarks. Bog types, designated for their outstanding representation of aquatic / wetland ecosystems.

Pinhook Bog includes about 105 acres of wetland. About 50% of the wetland has a floating vegetation mat that consists of Sphagnum mosses, sundew, pitcher-plant, leatherleaf, highbush blueberry, and tamarack. This wetland has been described as the finest bog in Indiana (Lindsey et al 1969).

WATER QUALITY

Water quality and quantity have historically been, and will continue to be, important issues at Indiana Dunes National Lakeshore. The proximity of heavy industry, poor air quality, major transportation corridors, agricultural land use, residential development, and recreational and commercial boat traffic provide major threats to the water resources at the national lakeshore.

In response to these threats the national lakeshore began monitoring the quality of its stream, open water, and groundwater resources on a monthly basis in 1990. The purpose of the monitoring program is to detect long-term trends in water quality as well as to detect contamination events. Monitoring for bacterial levels along the Lake Michigan shore is done weekly at all of the national lakeshore's swimming beaches to ensure the health and safety of visitors. Most of the bacterial contamination is thought to be natural in origin, but other sources are being investigated.

AIR QUALITY

Air quality at Indiana Dunes is directly affected by urban and industrial development in northwest Indiana and the Chicago metropolitan area. National ambient air quality standards were established under the Clean Air Act of 1977, as amended. Pollution levels were outlined, and the national lakeshore was designated a class II area, denoting that moderate increases in ambient pollution levels will be tolerated, but pollution levels must not exceed those identified under national ambient air quality standards.

The air quality biological effects research program found that air pollution has affected biological resources at Indiana Dunes. There has been a decrease in lichens that are sensitive to sulfur dioxide (NPS 1988a). The most common air pollution effect on biological resources is leaf injury from ozone, which has been documented on various species, including eastern white pine, jack pine, red oak, sycamore, yellow poplar, white ash, black cherry, quaking aspen, box elder, willow, basswood, milkweed, frost grape, and poison ivy. Visible pollution injury to the white and jack pines appeared widely throughout the national lakeshore (Armentano et al. 1984).

During 1984–91 ozone levels exceeded the primary national ambient air quality standards on four days during 1984, zero days during 1985 and 1986, five days in 1987, six days in 1988, zero days in 1989, and one day in 1990 and 1991. Ozone level data is insufficient to show a significant trend over time. Sulfur dioxide levels monitored during 1980–90 indicated levels were about 20% to 40% of primary national ambient air quality standards at Indiana Dunes National Lakeshore (NPS 1988a and 1992c).

Air quality can be expected to improve in the lakeshore area. Carbon monoxide, particulates, and sulfur dioxide levels should be reduced as state implementation plans are carried out. Attainment of the ozone standard will require many years of effort because the lakeshore is tied to the entire Chicago metropolitan area, which has one of the worst ozone problems in the nation (NPS 1988a).

NOISE

Noise from urban and industrial development in and around the national lakeshore sometimes obscures natural background noises. From a legal and regulatory standpoint, sound levels are not considered a major environmental problem.

A 1979 study of impacts from human noise on natural sounds identified sources that obscure natural sounds at the national lakeshore (IIT Research Institute of Chicago 1980). The sounds identified include motor vehicles, trains, power generation plants, steel mills, aircraft, boats, and construction equipment. Actual decibel levels recorded at the time of the study indicate that the background noise levels usually encountered in the national lakeshore area range from 25dbA to below 67dbA (decibels measured with the "A" scale). For comparative purposes, 60dbA is equivalent to a conversation and 70dbA is considered moderately loud, such as a vacuum cleaner. Current levels are unknown.

SCENIC QUALITY

Outstanding scenery can be found in several areas of the East Unit of Indiana Dunes National Lakeshore. Some scenic viewpoints are accessible [illegible].

East State Park Road is the most direct route from the visitor center to Kemil Beach and Lake Front Drive. North of U.S. 12, after crossing the South Shore Railroad tracks on this road, visitors enter a tree tunnel formed by trees that line and form a canopy across the road. Farther south, Furnessville Road offers a similar experience, but there the trees that line the road seem darker and deeper.

Lake Front Drive, which runs along the Lake Michigan shoreline, offers strikingly different scenery: the views are of the lake and shoreline. On clear days Chicago's tallest buildings can be seen about 40 miles away across the lake. On other days the lake's surface is broken by horizontal white streaks, which lengthen into waves that crash on the beach below the road.

Visitor parking is available at the Lake View facility, Rossone House, Kemil Beach, and Central Beach, from which visitors can work their way down to the beach to get a different perspective of the lake and shoreline.

Portions of the U.S. 12 corridor have high-quality scenic views, although the corridor is more a connecting route between recreational, historic, and natural areas than a destination by itself (NPS 1991b). The route's most scenic views are found in the East Unit and include natural open (middle to far ground views of wetlands, dunes, and grass or shrub lands), natural enclosed (trees forming "walls" beside and sometimes over the road), and rural residential (agricultural landscapes with solitary or clustered buildings, often with wooded backdrops). A detailed assessment of views and landscape units along U.S. 12 can be found in the *U.S. 12 Scenic Road Feasibility Study* (NPS 1991b).

Some outstanding scenery is not currently available for viewing by most visitors. There are sites in the high dunes east of Beverly Shores, some of which were once homesites, where there are outstanding views of the lake, the beaches, and the grass-covered or wooded dunes.

Another scenic view is north across the Great Marsh near Cowles Bog. This view can be seen from the dike along the new greenbelt trail extension of the Cowles Bog Trail. From the higher ground of the dikes, the patchwork of plant communities that make up the marsh (dogwoods, red maple – yellow birch swamp, cattail – tall herbs, and wet prairie – sedge meadows) has striking texture and color. Wooded dunes form the backdrop for this mile-long view across the marsh. Looking west from the Crescent Dune area, visitors can see miles of narrow beaches, steep shoreline bluffs, and dunes, including Mt. Baldy. Views of Lake Michigan and Chicago can also be seen from the Crescent Dune area and from atop Mt. Baldy.

Industrial developments are the most incongruous visual elements at the lakeshore. Rather than being discounted as visual intrusions, these elements can be used to tell the interpretive story of the lakeshore.

CULTURAL ENVIRONMENT

REGIONAL HISTORY

The riverways and dune ridges south of Lake Michigan in northwest Indiana have provided humans with a wealth of resources since the retreat of the glaciers. Archeological investigations in northwestern Indiana in general, and Indiana Dunes National Lakeshore in particular, have been limited in number and in scope. Most of what we know about the archeological record in northwest Indiana is the result of investigations conducted in the Kankakee River drainage to the south. The National Park Service has conducted a multiyear survey of the archeological resources of the national lakeshore.

Most archeological evidence of prehistoric settlement suggests the harsh topography of the area, with swamps and sand dunes, deterred anything but transient habitation. People came to the area during the summer and then migrated to the Kankakee River area for the winter.

The first Europeans to enter the area were the French, who came to convert the Indians to Christianity and to exploit the rich fur trade of the region.

The Jesuit priest Claude Jean Allouez reported Potawatomie groups on the western shores of Lake Michigan in 1667. He indicated that they subsisted by hunting, fishing, and cultivating maize. They traded their surplus maize with other groups. During the last part of the 17th century the Potawatomie began to migrate south, and by the late 18th century they inhabited the entire region surrounding the southern end of Lake Michigan.

Other Indian tribes that occupied the general area were the Miami, Mascouten, Shawnee, and Wea Indians near the St. Joseph and Kankakee Rivers.

The first permanent Euro-American settlement in Porter County was established by Joseph Bailly. Bailly was born in Quebec in 1774, but he left Canada to pursue the fur trade, which was centered at Mackinac. Although he collaborated with the British in the War of 1812 and was an American prisoner of war for a time, he remained in the United States after the war and became a citizen. Bailly received a license to trade with the Potawatomies, and in 1822 he set up a trading post on the Little Calumet River near the Sauk Trail, where he built a home for his family. In the 1820s Bailly opened a tavern on the Chicago-Detroit road north of the homestead and laid out a town (Baillytown), which was never developed. An archeological study at the Bailly Homestead produced evidence of subsequent historic occupations and a prehistoric component.

When Indiana was established as a state in 1816, the fur trade in the Great Lakes was controlled by John Jacob Astor's American Fur Company. Under Astor's direction, posts were established at Chicago and Detroit. The treaties of Mississinewa (1826) and Tippecanoe (1832) allowed for federal purchase of Indian land, opened the way for white settlers, and ended the era of Indian dominance of the Calumet region.

The northwest was one of the last parts of Indiana to be settled by Euro-Americans. This was largely because of the expansive wetlands of the Kankakee and Calumet plains. The wetlands impeded access to the area from the south and prevented farming without major drainage projects. The Michigan Road between Michigan City and Indianapolis and a lakeshore stage route between Michigan City and Chicago were both completed in 1833.

These improvements in access made wider settlement possible. Settlers radically changed the landscape. Forests were cleared and replaced with agricultural fields. A few local sawmills processed some of the timber; several were within the national lakeshore. Other early commercial enterprises in the area included gristmill and tanning operations.

In the 1860s farms began to dot the landscape near the Bailly Homestead. These family farms raised produce for their own needs and also raised crops to sell in regional markets.

By the late 1800s ditching and draining the wetlands began in earnest. The widespread ditching effort, along with the over-harvest for commercial purposes, contributed to the destruction of local cranberry bogs. Wetland drainage also made more land available for agriculture and for residential and industrial development.

During the 1880s sand mining companies hauled large quantities of sand from the dunes for use in Chicago landfills and for building industries. Around 1900 the character of the region changed with the arrival of the steel industry. Although commercial agriculture was still practiced (and still is today), the population of the region became increasingly dependent on outside employment offered by the nearby industrial complexes in the surrounding urban areas.

Conservationists wanting to protect the shoreline environment began pressing for a national park after World War I. Hearings were held in Chicago on a Sand Dunes National Park in October 1916. After the war a state park movement predominated, culminating in the establishment of Indiana Dunes State Park in 1925. A growing appreciation of the dunes shoreline environment also encouraged the development of a number of private residential areas. Residential development brought in people, buildings, parking lots, and highways.

After World War II steel companies revived the push for industry in the state park area, while other concerned citizens explored again the possibility of establishing a national park. In 1953 the Save the Dunes Council bought Cowles Bog to save it from development.

In 1958 a national park bill was introduced into Congress aimed principally at the land belonging to Midwest Steel, Bethlehem Steel, and Northern Indiana Public Service Company. After nearly 10 years of debate a compromise was reached by Congress. In 1966 bills for both a harbor and a national park were passed, more or less fixing the land use patterns that now characterize Porter County between U.S. 12 and Lake Michigan.

HISTORIC RESOURCES

TABLE 3. NATIONAL REGISTER OF HISTORIC PLACES LIST

Property Name	Status
Bailly Homestead	national register and registered national landmark
[illegible] Prehistoric Archeological District	national register
Good Fellow Club Youth Camp	[illegible]
[illegible] District	[illegible]
[illegible] House	[illegible]

Indiana Dunes National Lakeshore has five districts/properties that are eligible for listing on the National Register of Historic Places.

Bailly Homestead and Cemetery

Five structures associated with the Bailly family and a nearby cemetery are listed on the national register as the Bailly Homestead. The homestead itself is a registered national historic landmark. The exteriors of the buildings have been restored for interpretation. The homestead is said to be the last remaining fur trading site in the region. The main house was begun in 1834 (the year before Joseph Bailly's death) and actually postdates the fur trading era. The house was substantially remodeled after Bailly's death and has been restored to its 1917 appearance.

Chellberg Farm

The Chellberg Farm is historically significant because it represents the ethnic heritage of Swedish settlements in Porter County, Indiana.

The National Park Service acquired the Chellberg farm in 1972 and began its renovation in 1987 with the reconstruction of the porch.

Until its purchase by the National Park Service, the farm belonged to descendants of the original owners, Anders and Johanna Kjellberg, who had emigrated from Sweden in 1863. In 1872 they established their farm on land purchased from Joel Wicker, the husband of Joseph Bailly's daughter Hortense. The Chellbergs' first home on the farm was destroyed by fire; however, they replaced it with a two-story brick structure in 1885, which is known today as the Chellberg farmhouse. In approximately 1902 a kitchen wing was added to the house, and the original kitchen was converted into a bedroom.

World's Fair Houses

The World's Fair houses, recognized as the Century of Progress Architectural District, were constructed as demonstration models for the Chicago Century of Progress Exposition of 1933 and 1934. This World's Fair celebrated the centennial of America's largest midwestern city. Exhibits depicted the century of progress in science and technology and its effects on industry and on everyday life.

One of the most popular attractions was a collection of 13 model houses. The houses were intended to show the impact of modern technology on residential architecture and to show the latest innovations in house design, furnishing, and equipment. In an effort to promote new products, house sponsors went to great lengths to demonstrate new structural and surface materials, old materials put to new uses, the latest heating and air conditioning units, kitchen equipment, bathroom fixtures, and labor-saving devices.

After the fair closed in 1934, Chicago developer Robert Bartlett purchased six of the houses from the architectural exhibit. He loaded four of them onto a barge and moved them 50 miles away to Beverly Shores, a new development along Lake Michigan. According to local residents, Bartlett built a 200-foot-long pier on the lake to receive the buildings. The other buildings were moved by truck.

When Indiana Dunes National Lakeshore was established in 1966, it included these Century of Progress houses. Reservations of use have begun to expire, and currently only the House of Tomorrow and the Armco-Ferro House are in private use.

The Historic American Buildings Survey and Historic American Engineering Record teams have completed full documentation of all these structures.

Weiboldt-Rostone House. The Rostone House was designed by Walter Scholer as an experiment with new construction materials. The building shell was made from a synthetic "cast stone" created from alkaline earths, shale, and limestone quarry waste chips. The house is a two-story, steel, prefabricated structure. Its dimensions are 33 feet by 72 feet, and it has a flat roof covered with tar and gravel. The Rostone exterior failed and was replaced in 1950 by "permastone" (tan cast stone panels in a Roman brick pattern). The Art Deco inspired front door frame is the only exterior remnant of the original Rostone facing.

To protect the property, a 175-foot-long concrete sea wall was constructed in 1952. High water levels covered the wall with sand, but with time much of it was eroded and the stability of the sand fill between the sea wall and the foundation and basement of the house was affected. As a result, the house is no longer safe for habitation.

House of Tomorrow. The House of Tomorrow, designed by George Fred Keck, contains the most radical use of space of all the historic structures on the shore of Lake Michigan. All rooms radiate in a pie shape from the central core of the three-story dodecagonal (12-sided) structure, 42 feet in diameter. The building is made of steel, glass, copper, and concrete. A ground-level airplane hangar and garage exemplified Century of Progress ideals of progress and prosperity; this area was converted into living space sometime before 1958.

Florida Tropical House. The Florida Tropical House was designed by Robert Law Weed. It is a two-story structure with a concrete foundation, a flat deck roof, and pink stucco finish. This house exemplifies the broad open spaces, big windows, and ample air flow typical of a south Florida home. Steel, stucco, and aluminum are the basic materials. This house features innovative use of interior space, natural lighting, and air circulation.

Armco-Ferro-Mayflower House. The Armco-Ferro House was designed by Robert Smith, Jr. It is a prefabricated three-story, frameless, all-steel structure, with a solarium on the roof deck. It has a concrete foundation, a flat roof, walls of sheet steel covered with white porcelain enameled panels, and an enclosed front porch.

Cypress Log Cabin and Guest House. These structures were designed by Murray D. Hetherington. The Cypress Log Cabin is a one-story frame house with peeled cypress log siding. It has a concrete slab foundation, a gabled roof with hand-split cypress shingles, exposed wood rafters, and [illegible], and an enclosed porch to the west. The guest house is a one-story frame structure.

Lustron Houses

These houses were the idea of Chicago businessman Carl Strandlund and are an interesting part of postwar U.S. architectural history. In 1946 Strandlund obtained a $37.5 million federal loan to construct these prefabricated, porcelain-enameled steel houses to help ease the post-World War II housing shortage. In 1948 Lustron houses were being produced and promoted as a modern, affordable, and low-maintenance alternative for middle-class families.

Manufacturing the Lustron houses was unique in design and construction. Two-foot-square porcelain panels were stamped out, sprayed with various colors of enamel, and fired. Steel interior wall and ceiling panels came in 12 pastel colors. The materials were taken to a building site on specially designed trailers and completely assembled in only three to four days. Their production resembled an automotive assembly line.

Public response to these unconventional homes was mixed. Only about 3,000 Lustron houses were built. While costs of one to three bedroom Lustron homes ranged from about $7,000 to $9,000, which was competitive with comparably-sized wood frame houses, their design was not for everyone. For example, pictures had to be hung with magnets. In time, the "prefab" tag came to suggest inferior quality and standardized, monotonous design.

Good Fellow Camp

The idea for the 63-acre Good Fellow Camp came from E. Earl Moore, a former superintendent of the Gary works of the Carnegie Illinois Steel Corporation (now U.S. Steel). Moore envisioned the camp as a way to build company loyalty by providing summer recreation for employees' children. The Good Fellow Club, a social organization of white collar workers, implemented Moore's plan.

The Good Fellow Club Camp Lodge, which is eligible for the national register, was the main structure of the camp. The camp was closed in 1975, and the Park Service acquired the property in 1977.

South Shore Railroad Cars

The South Shore Railroad is the last operating interurban electric railroad in the country. This railroad has provided vital transportation for the northern Indiana-Chicago area throughout this century. In the 1920s it served as a principal means of transportation for visitors to Indiana Dunes State Park, and today its trains continue to regularly traverse Indiana Dunes National Lakeshore. The railroad played a major role in the development and industrialization of northwestern Indiana by providing a cheap, reliable means of transporting goods.

The National Park Service purchased 10 vintage South Shore railroad cars in 1984. Nine more were donated by the Northern Indiana Commuter Transportation District. All were used until 1983.

and have been added to the lakeshore's museum collection. Of the original 19 cars, four retired in the original 1920s interurban appearance; the others had been modernized. Twelve of the cars have been loaned to museums for preservation and exhibition. Three cars have been restored.

ARCHEOLOGICAL RESOURCES

The NPS Midwest Archeological Center initiated a parkwide survey of archeological sites in 1992. This was the first of a four-year field investigation aimed at estimating the number and distribution of sites in the lakeshore. The Midwest Archeological Center will soon publish a final report summarizing the results.

The work completed to date indicates that Indiana Dunes National Lakeshore has many archeological resources with good to excellent research potential (NPS 1992a and 1992b). Researchers discovered many short-term, prehistoric campsites. Preliminary results also show that the area has many relatively small but intact sites.

Previous East Unit studies include a field assessment by Honerkamp (1968), a small excavation at Bailly Homestead by Limp (1974), and a study at Bailly by Munson (1976).

OTHER CULTURAL RESOURCES

The National Park Service is in the process of preparing an inventory of any landscapes at the national lakeshore that may be eligible for the National Register of Historic Places. In addition, the National Park Service is conducting a survey of other properties that may be eligible for inclusion on the Park Service's List of Classified Structures.

ACCESS AND CIRCULATION

Indiana Dunes National Lakeshore is directly accessible by U.S. Route 12. A number of interconnecting highways, including I-94, I-80/90, U.S. 20, and IN 49 link U.S. 12 to the state and regional highway system. This well-developed highway system makes the lakeshore accessible to all parts of the country. Rail passenger service is provided by the Northern Indiana Commuter Transportation District (NICTD) on the South Shore line, which runs parallel to U.S. 12 through the East Unit. The South Shore Railroad has stops at Ogden Dunes, IN 49, Beverly Shores, and Michigan City.

TRAFFIC CONDITIONS

U.S. 12 is primarily a two-lane road in the East Unit. Traffic controls consist of stop signs on intersecting streets and traffic signals at the east gate of Bethlehem Steel and Broadway Avenue. Speed limits range from 40 to 55 mph. The speed limit for most of U.S. 12 in the East Unit is 45 mph.

U.S. 20 is a four-lane road with left-turn lanes at several intersections. Traffic controls consist of stop signs on intersecting streets, traffic signals at IN 249, IN 149, and Waverly Road, and a grade-separated intersection at IN 49. Speed limits range from 45 to 55 mph.

Traffic counts for U.S. 12 and U.S. 20 were analyzed in the 1989 *Transportation Study* (Traffic Engineers Inc. 1989) for the lakeshore. Average daily traffic volumes on U.S. 12 for the summer of 1989 ranged from 12,950 vehicles through Burns Harbor, 4,500 vehicles east of East State Park Road, and 7,770 vehicles in the town of Pines. Average daily traffic volumes on U.S. 20 ranged from 16,530 vehicles near IN 249, and 11,530 vehicles east of IN 520.

An analysis of major intersections indicated that acceptable levels of traffic service were recorded except at U.S. 12 and IN 149, U.S. 12 and IN 49, and U.S. 20 and IN 520. These intersections recorded operational delays of 40-60 seconds.

In addition to the total daily vehicle counts, an analysis of truck travel patterns revealed that heavy truck traffic ranged from 5% to 16% of the total traffic on U.S. 12, and 10% to 21% of the total traffic on U.S. 20. Both highways carry a mix of local and regional traffic including residential, commercial, and recreational traffic. Heavy trucks use both highways; however, U.S. 12, with only two lanes, a lack of adequate shoulders, and numerous intersection deficiencies, cannot safely accommodate large heavy vehicles. The heavy commercial traffic detracts from the roadway's potential to provide for an enjoyable visitor experience.

ROADS AND PARKING IN AND NEAR THE MAJOR VISITOR USE AREAS

Most of the roads that provide shoreline access are narrow two-lane roads that were intended to serve residential and other low-density development areas. These roads, under state and local jurisdiction, continue to serve increasing local development and lakeshore visitors.

A traffic study in Beverly Shores was completed in 1993. It indicated that traffic volumes on local roads north of U.S. 12 and between East State Park Road and the Porter-LaPorte County Line Road generally did not cause congestion. All of the road segments and the intersection of Lake Front Drive and Broadway Avenue operated with little or no congestion or delay during the July 10-11 and July 17-18 weekends in 1993. There was about 35% more traffic on weekends than during weekdays. The study also indicated that each of the road segments was somewhat more congested during the July 4-5 period, but that they continued to operate at moderately high levels of traffic service.

Parking surveys were conducted at six parking areas in the East Unit on July 10 and 11, 1993, to determine parking accumulation and duration (see table 4).

Parking in the lakeshore lots is free; however, vehicles in the town lot and the adjacent town parallel parking area are required by the town to have a special resident parking permit.

The high parking occupancy and moderate length of stay indicate that the Lake View lot is used extensively by many different vehicles every weekend day. There is some conflict at Lake View between drivers maneuvering in and out of parking spaces and those traveling past the site.

The high occupancy and long length of stay indicate that the Rostone lot is used by a few vehicles per weekend day. These visitors tend to stay at the beach for long periods.

The Kemil lot fills up quickly during good weather, but patrons only stay for an average of two hours.

There is some available reserve parking capacity at the Central Beach lot and the town lot during all hours of an average weekend day. The average duration of most parking at these areas is less than two hours.

Although the town parallel parking area was at capacity at 5:00 P.M. on Saturday, July 10, it was at less than capacity at other times during the weekend survey.

Only 28 (about 2%) of the 1,354 vehicles that parked in the six areas during the study period were buses, trucks, RVs, or motorcycles.

General observations at the Mt. Baldy and Porter Beach lots indicated that the Mt. Baldy lot was at or over capacity during weekend afternoons and that the Porter Beach lot was used at less than capacity.

TABLE 4. PARKING OCCUPANCY AND DURATION

PARKING LOT	CAPACITY	HIGHEST USE	TIME OF HIGHEST USE	AVERAGE DURATION (HOURS)	
				Saturday	**Sunday**
Kemil Beach	[illegible]	[illegible]	1:00 P.M.	1.94	2.70
Rostone	7	8[3]	1:00 P.M.	1.87	1.80
Lake View	40	42	1:00 P.M.	1.43	2.33
Town Lot[1]	29	22	5:00 P.M.	1.25	1.48
East of Town[2]	22	22[3]	5:00 P.M.	1.87	1.90
Central	70	48	1:00 P.M.	1.34	1.44

Source: *Indiana Dunes National Lakeshore Traffic Study Final Report* [illegible], BRW Inc., Minneapolis, MN, August 1993.

1. Beverly Shores town lot at Broadway and Lake Front Drive.
2. Legal parallel parking east of the town lot on the north side of Lake Front Drive.
3. Capacity exceeded due to illegal parking.
4. Saturday (July 10, 1993), Sunday (July 11, 1993) [illegible]

VISITOR USE

LAKESHORE VISITATION

The variety of recreational opportunities available at Indiana Dunes National Lakeshore and the lakeshore's proximity to metropolitan Chicago resulted in more than 1.75 million recreational visits to the lakeshore in 1993 and nearly 1.7 million recreational visits in 1994 (see table 5). Recreational use has fluctuated over the years between 1.8 and 2.0 million recreational visits. It is expected that visitation to the national lakeshore will gradually increase over time.

Visitor use of the East Unit accounted for about 83% of the total visitation to the lakeshore in 1993. Table 6 displays recreational visitation to the lakeshore by site. Six out of 10 visits are made to the [illegible] areas of the lakeshore that provide beach access — West Beach, Porter Beach, Kemil Beach, Lake View, and Central Beach. Visitors to the Kemil Beach / Lake View area includes [illegible] Lake Front Drive. This is the most popular area of the national lakeshore and accounts for 3 out of 10 recreational visits.

Monthly visitor use for 1994 is displayed in table 7. The lakeshore is open all year, and visitors make use of its resources and facilities throughout the year. Visitation begins to show a dramatic increase in April and falls off significantly in November. The lakeshore's peak season is May through September when 69% of the recreational visitation occurs. Less than 10% of total lakeshore annual recreational use is from November through March. October and April account for the remaining 18% of the visitation. The Lakeshore's 1993 *Statement for Management* points out that over the last 12 years increasing numbers of visitors have come during the spring and fall seasons.

Overnight use reporting has only recently begun. In March 1992 the lakeshore began offering overnight tent and RV camping. The campground has 79 sites; 54 of them are designed for conventional drive-in camping, and 25 spaces are walk-in sites. There are no electrical or sewage hookups, but water and comfort stations are provided in central areas for use by all campers. The campground has a sanitary dump station for RVs. A convenience store is within walking distance. The campground is closed from November 15 through March 15.

An overnight stay is defined as one visitor spending one night at the lakeshore for recreational purposes. Overnight stays are counted separately and do not correspond exactly to recreation visits.

The first full year of campground operation was in 1993. Overnight use accounted for only a minor portion of the lakeshore's total recreational use. Table 8 illustrates that the months of May through September constituted the peak season for camping during 1994.

A visitor survey to provide visitor information pertaining to the lakeshore's summer season was conducted July 12–18, 1993.

Responses to the survey indicated that 34% of visitors were from Indiana, 44% from Illinois, and an additional 2% to 4% each were from Ohio, Wisconsin, Michigan, and Missouri. Visitors from other states totaled 12%, and foreign visitors comprised 4%.

The summer survey revealed that 13% of the respondents stayed one hour or less, 56% reported staying between two and four hours, and 32% said that they visited the lakeshore for five or more hours.

More than 50% of the respondents walked on the beach, sunbathed, and swam. Between 30% and 45% were sightseeing, walked or jogged, hiked on trails, visited the nature center or visitor center, and picnicked. Between 3% and 9% were camping, or participated in nature study, interpretive programs, bicycling, and other activities. According to the survey, the most common reasons for visiting Indiana Dunes were to:

visit the beaches (79%)
visit the dunes (72%)
enjoy nature (50%)
walk/hike (41%)
find solitude/quiet (32%)
use recreational opportunities (27%)
picnic (25%)

TABLE 5. NATIONAL LAKESHORE — ANNUAL VISITATION 1985–95

YEAR	RECREATIONAL VISITS[1]	NONRECREATIONAL VISITS[2]	TOTAL VISITS
1995	1,696,488	145,639	1,842,127
1994	1,699,958	149,833	1,849,791
1993	1,761,094	321,321	2,082,415
1992	1,973,098	313,877	2,286,975
1991	2,058,801	342,488	2,401,289
1990	1,929,601	348,015	2,277,616
1989	1,761,902	380,204	2,142,106
1988	1,885,376	362,828	2,248,204
1987	1,576,238	336,786	1,913,024
1986	1,676,583	344,981	2,021,564
1985	1,800,526	[illegible]	2,144,139

SOURCE: National Park Service, Washington Office, Socio-Economic Studies Division.

1. Recreational visits are the entries of persons for any part of a day onto lands or waters administered by the National Park Service for recreational purposes.

2. Nonrecreational visits include people passing through [illegible] commuter [illegible] with business in the Lakeshore, any civilian activity a part of or incidental to the pursuit of a gainful occupation, government personnel (other than NPS employees) [illegible] NPS buildings for civic or other local governmental business [illegible] independent of NPS [illegible].

TABLE 6. NATIONAL LAKESHORE 1993 — VISITOR USE BY LOCATION

LOCATION	RECREATIONAL VISITS	LOCATION	RECREATIONAL VISITS
Interpretive Activities	31,017	Porter Beach	71,174
Mt. Baldy	192,629	Bailly/Chellberg	73,066
Central Beach	57,608	Cowles Bog Trail	13,398
Kemil Beaches	712,218	Campground*	13,245
Buell Visitor Center	100,317	Inland Marsh	46,548
Horse Trail	30,006	West Beach	226,019
Tremont Picnic	86,256	Other Sites	7,723
Subtotal	1,309,412	Subtotal	451,682
		GRAND TOTAL	1,761,094

SOURCE: National Park Service, Indiana Dunes National Lakeshore.
* Overnight stays

TABLE 7. NATIONAL LAKESHORE — MONTHLY VISITATION 1995–96

MONTH	RECREATIONAL VISITS	NONRECREATIONAL VISITS	TOTAL VISITS
January	[illegible]	12,797	[illegible]
February	[illegible]	11,884	67,210
March	[illegible]	12,884	101,507
April	[illegible]	12,420	145,610
May	[illegible]	12,841	213,820
June	257,412	[illegible]	270,812
July	281,718	[illegible]	294,811
August	[illegible]	[illegible]	[illegible]
September	[illegible]	[illegible]	173,457
October	[illegible]	[illegible]	[illegible]
November	[illegible]	[illegible]	[illegible]
December	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	[illegible]	[illegible]

[illegible] Office [illegible] Division

TABLE 8. NATIONAL LAKESHORE — MONTHLY OVERNIGHT STAYS FOR 1994

[illegible]	[illegible]	RECREATIONAL VEHICLE CAMPERS	TOTAL OVERNIGHT STAYS
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	47	[illegible]
[illegible]	0	0	0
TOTAL	[illegible]	[illegible]	[illegible]

[illegible] Office [illegible] Division

Those surveyed were allowed to select more than one answer to this question so the figures do not total 100%.

Swimming, sunbathing, and other activities accommodated by beach and waterfront access are among the most popular recreational pursuits at the East Unit. Fishing and boating are also available in the East Unit. Boat access to the lakefront is open to the public, but boaters are excluded from designated swimming beaches. The Little Calumet River provides fishing opportunities.

The East Unit has an extensive trail system, and hiking is a popular activity. Many of the trails interconnect. The lakeshore also offers bicycle trails (Calumet bike trail), nature trails, and a horseback riding trail at Ly-co-ki-we.

Dune climbing at Mt. Baldy is a popular recreational experience. When there is enough snow, the Ly-co-ki-we trail is used for cross-country skiing and snowshoeing.

Picnicking is popular throughout the lakeshore. Developed East Unit picnic sites are found at Bailly-Chellberg, Lake View, Tremont, and Mt. Baldy.

Environmental education is an important part of the lakeshore's program. It is anchored out of the West Unit's Paul H. Douglas Center for Environmental Education, but programs are offered throughout the lakeshore. Ranger-led hikes and other special activities and demonstrations are popular in fair weather. The lakeshore also hosts several festivals that draw increasing numbers of people each year. The most popular festivals are the spring Maple Sugar Time Festival and the fall Harvest Festival, both of which are held at the Bailly / Chellberg area.

PROJECTIONS OF POTENTIAL DEMAND

Recreational visits projected for Indiana Dunes National Lakeshore (table 9) are based on the data in table 8. Low, medium, and high levels of use are presented. In spite of some years of declining visitation recently, recreational use of the lakeshore is expected to rise over the next 10 years. The trend is for overall increases in recreational use, with visitation ranging between 1.8 million and 2.7 million recreation visits by 2003. The moderate forecast is for the lakeshore to receive more than 2.22 million visits by the year 2003.

VISITOR SERVICES AND REGIONAL RECREATIONAL FACILITIES / AREAS

All required visitor services are readily available. Primary service areas are the communities surrounding the East Unit — Michigan City, The Pines, Porter, Chesterton, and Portage. The following is a partial list of recreation areas near the East Unit. Ownership is indicated in parentheses.

Indiana Dunes State Park (State)

The 2,182-acre Indiana Dunes State Park lies between Lake Michigan and U.S. 12 and is bounded by East State Park Road on the east and Dune Acres on the west. The eastern two-thirds of the park is a natural area and designated state nature preserve, and fires and organized activities are not permitted there. This area of the park contains Mt. Tom, the highest remaining Indiana dune (192 feet tall), and three of the largest blowouts in the park. Ample parking, a snack bar, and restroom facilities are near the bathing beach at the west end of the park. The park provides a self-guiding nature trail and a nature center staffed by two park naturalists. There are 300 campsites and 16 miles of marked hiking trails. There are also cross-country ski trails, and the park provides associated rental equipment. Six picnic shelters are available for rent, and there are [illegible] designated swimming [illegible].

Portage Imagination Glen (City of Portage)

This [illegible]-acre area contains some active recreation areas, including picnic areas and ballfields. Trails also traverse the river bottom meadows of the glen. This area also offers opportunities for nature study, bird watching, and walking or jogging.

TABLE 9. NATIONAL LAKESHORE — POTENTIAL RECREATIONAL USE 1995–2005

YEAR	PROJECTED RECREATIONAL VISITS		
	LOW	MEDIUM	HIGH
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Washington Park (Michigan City)

[illegible]

INTERPRETATION

Environmental and Heritage Education

[illegible]

Formal educational programs are provided at sites throughout the lakeshore for groups (generally all [illegible]

[illegible]

[illegible]

East Unit Public Programs

NPS staff and volunteers provide formal guided walks and interpretive talks year round. Eight hundred and thirty-six programs were attended by 52,557 people in 1994. Most formal public programs are offered daily in summer and on weekends during the rest of the year. Interpretive talks are given mostly in the visitor center. Frequent guided walks are given at the Bailly Homestead and Chellberg Farm.

In addition to formal programs, staff at the visitor center and contact station provide information and interpretation. Informal (unstructured) interpretation is provided by interpreters, patrol rangers, maintenance personnel, and volunteers throughout the lakeshore, especially at historic sites and beach areas.

East Unit Facilities

Dorothy Buell Memorial Visitor Center. The Dorothy Buell visitor center is at U.S. 12 and Kemil Road. The building was a church and has been converted to a visitor center. It has two stories; the upper floor is wheelchair accessible through a back door to the auditorium, and the lower floor is accessible at ground level. Visitation to the Dorothy Buell center in 1994 was 60,192. Public spaces include an auditorium, a small exhibit room, an information area, a bookstore, and restrooms. The visitor center is open 363 days a year.

Bailly–Chellberg Contact Station. The Bailly–Chellberg contact station is on Mineral Springs Road, just north of IN 20. It contains a small exhibit area, an information and sales area, and restrooms. Restrooms are open daily; interpretive areas are generally open daily during the summer and on weekends throughout the year. Visitation at the Bailly–Chellberg contact station in 1994 was 10,731.

Bailly Homestead. Four of the five remaining structures are open periodically to the public through guided tours or attended stations. The site is also used for festivals and living history programs.

Chellberg Farm. Chellberg Farm, part of the Swedish Farming District, includes six restored historic buildings, fields, farm animals, woodlots, and a seasonal stream. The farm is open daily and hosts two major festivals each year.

East Unit Interpretive Media

Interpretive media at the Dorothy Buell center include an introductory slide show in the auditorium, 500 square feet of exhibits, and publications and theme-related sales items. Space for exhibits is extremely limited. Exhibits in the Bailly–Chellberg contact station interpret the history of the Bailly–Chellberg area. Sales publications and theme-related items are available in the contact station. A free park folder is distributed at both centers.

Outdoor interpretive media include trail brochures, bulletin cases, and wayside exhibit panels. One brochure interprets the 1-mile loop trail behind the Dorothy Buell center; another interprets a 2-mile loop trail at Bailly–Chellberg. Wayside exhibits and bulletin cases are located at several beach access areas as well as at trailheads and the two historic areas.

West Unit Facilities

Paul H. Douglas Center for Environmental Education. This facility is at the edge of Miller Woods in Gary, Indiana. It contains activity areas (an audiovisual / multipurpose room, live animals for programs, and an outfitting area for winter programs). Trails and a boardwalk provide settings for outdoor activities. The Douglas center is open for scheduled group programs. Visitation at the Douglas center in 1994 was 11,619.

West Beach Contact Station. The contact station at West Beach has exhibits, an information counter, and restrooms. This facility is open mostly on winter weekends for hikers and skiers and is also used by scheduled groups. An unstaffed station in the West Beach bathhouse, which is open daily in the summer, features exhibits and an information area. Visitation at the West Beach contact station in 1994 was 5,437.

Other Interpretive Facilities in the Area

Indiana Dunes State Park (offering a nature center and interpretive programs) is surrounded by the national lakeshore and Lake Michigan. The Park Service and Indiana Dunes State Park cooperate on many aspects of interpretive programming, including publicity. One friends group serves both state and federal parks.

Other public interpretive programming near the lakeshore's East Unit is available at Warren Dunes State Park in Michigan and through several nearby cities and counties.

SOCIOECONOMIC ENVIRONMENT

POPULATION

[illegible]

[illegible]

[illegible]

population in these three counties has stopped declining, and each county has experienced a slight increase in population (see table 12).

ECONOMY

[illegible]

[illegible]

[illegible]

[illegible]

TABLE 10. POPULATION DYNAMICS — LAKE, PORTER, AND LAPORTE COUNTIES, INDIANA, 1970–90

COUNTY	1970	1980	CHANGE 1970–80	1990	CHANGE 1980–90
Lake County	546,253	522,965	-4.3%	475,594	9.1%
Porter County	87,114	119,816	37.5%	128,932	7.6%
LaPorte County	105,342	108,632	3.1%	107,066	1.4%

SOURCES: "Community Analysis," Northern Indiana Public Service Company, September 1991; Valparaiso Economic Development Corporation; U.S. Department of Commerce, Bureau of the Census, 1991.

TABLE 11. POPULATION DYNAMICS — SELECTED CITIES IN LAKE, PORTER, AND LAPORTE COUNTIES

COUNTY AND CITY	1970	1980	CHANGE 1970–80	1990	CHANGE 1980–90
Lake County	546,253	522,965	[illegible]	475,594	[illegible]
Gary	175,416	151,953	[illegible]	116,646	[illegible]
Porter County	87,114	119,816	[illegible]	128,932	[illegible]
Beverly Shores	940	[illegible]	[illegible]	[illegible]	[illegible]
Burns Harbor	1,284	[illegible]	[illegible]	[illegible]	[illegible]
Chesterton	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Dune Acres	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ogden Dunes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Town of Pines	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Portage	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Porter	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
LaPorte County	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Michigan City	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SOURCES: [illegible] National Lakeshore, National Park Service, [illegible] Northern Indiana Public Service Company, September 1991; 1990 Census Data, Bureau of the Census, U.S. Department of Commerce.

TABLE 12. POPULATION DYNAMICS — LAKE, PORTER, AND LAPORTE COUNTIES, INDIANA, 1990–92

COUNTY	1990	1991	1992	CHANGE 1990–92
Lake County	[illegible]	[illegible]	[illegible]	[illegible]
Porter County	[illegible]	[illegible]	[illegible]	[illegible]
LaPorte County	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Bureau of [illegible], [illegible] May 1994

TABLE 13. PER CAPITA INCOME — LAKE, PORTER, AND LAPORTE COUNTIES, INDIANA, 1990–92

COUNTY	1990	1991	1992	CHANGE 1990–92
Lake County	[illegible]	[illegible]	[illegible]	[illegible]
Porter County	[illegible]	[illegible]	[illegible]	[illegible]
LaPorte County	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Bureau of [illegible] May 1994

LANDOWNERSHIP AND USE

Indiana Dunes National Lakeshore has a complex boundary. Along the boundary are industrial complexes, transportation and utility corridors, commercial businesses, and residential communities (Dune Acres and Beverly Shores are surrounded by the East Unit of the national lakeshore). Many nearby residents commute daily to Chicago. Demand for recreational access to the shoreline has already exerted strong pressure for development and intense use.

There are incompatible uses in several locations. Adjacent open space and agricultural areas are being developed. These land use shifts are due to economic pressures. The competition for the limited land available makes it probable that the lakeshore will eventually be surrounded by intense development.

Nearby truck, commuter, residential, and rail traffic noise, air and water pollution from industry, and septic tanks and other subsurface facilities degrade the resources and visitor experience at the East Unit of the national lakeshore.

The ability of the National Park Service to manage the resources within the lakeshore boundaries is constrained because some parcels are not federally owned. These include nonfederal public land, residential land with reservations of use, industrial land, and transportation and utility rights-of-way, some of which have been specifically recognized by Congress.

Nonfederal public lands authorized for inclusion in the national lakeshore but held and administered by state or local agencies include the 2,182-acre Indiana Dunes State Park. The state park is managed by the Indiana Department of Natural Resources for purposes compatible with those of the national lakeshore. Movement of visitors between the state park and national lakeshore is constrained by the state park's boundary fences, and visitor confusion regarding the two parks is common.

Other nonfederal public land includes the beachfront of Dune Acres and a section of the Cowles wetlands near Mineral Springs Road. Congress has stipulated that such land will generally be acquired only through donation.

When Indiana Dunes National Lakeshore was established, Congress directed that owners of residential properties within the national lakeshore could reserve the use of their homes and land for a number of years after the sale of the properties to the government. These properties are known as reservations of use. Gradually, these expire and the properties have been returned to federal possession and management.

OPERATIONS AND MANAGEMENT

Indiana Dunes is a linear park about 25 miles long. It is in an urban / industrial corridor, and its land use and ownership patterns are a checkerboard of communities, industries, and private ownership. Natural, cultural, and recreational resources are dispersed throughout the lakeshore, as are visitor facilities.

Park operations functions in the East Unit include Lakeshore headquarters and the maintenance complex [illegible].

Operations requirements are determined by the lakeshore's mission, which is the preservation, protection, and interpretation of the resources. There are 110.8 full-time equivalent (FTE) employees. Increases in land area, resources, visitation, and services provided at the lakeshore over several years have not resulted in increases in staff. The national lakeshore currently has a shortfall of 87.2 FTE employees.

ENVIRONMENTAL CONSEQUENCES

TABLE 14: SUMMARY OF IMPACTS

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
IMPACTS ON NATURAL RESOURCES				
Impacts on Dune Systems/Ecosystems	• Development would occur on previously disturbed sites. • A continued beach nourishment program, when implemented, would mitigate loss of beach and shoreline erosion. • Some impacted areas would be restored or allowed to restore themselves naturally. • Eliminating social trails in the dunes would decrease impacts on dunes.	• There would be minimal impacts from constructing Crescent Dune trail. The boardwalk-like trail would guide or formalize pedestrian traffic on the dunes and vegetation and maintain dune stability with little impact on dune ecology. • Developing a picnic facility and parking area on expanded reservations of road and occupancy at east end of Lake Front Drive would not have new impacts. • Constructing Crescent Dune accessible path to a beach-access platform at Porter Beach would avoid impacts on dune dynamics. • Developing trails and small parking areas along existing roads and driveways between Mt. Baldy and Lake Front Drive would not adversely impact the dunes. • Three acres impacted/dunes would be restored if the Riviera and [illegible] Houses were relocated to the south side of Lake Front Drive		• Removing parts of East State Park Road and Lake Front Drive and the Kemil Beach parking lot and restrooms would help to reconnect, preserve, and restore the dunes in this area to the greatest extent possible. The disturbed area would be actively revegetated and managed in conjunction with the state nature preserve. • Lakeview, Dunbar and Riviera parking would be relocated; in those areas, impacts would be mitigated by using disturbed areas and careful facility design. • The picnic facility and parking area at east end of Lake Front Drive would not impact new areas.

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	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Wildlife	• It is anticipated that impacts associated with the proposed developments would have no permanent adverse effects on wildlife or habitat. • Existing impacted areas that would be restored to natural conditions would provide new wildlife habitat. • Road closures and culverts would improve habitat and benefit aquatic and some amphibian species.	• There would be significant beneficial impacts on wildlife and habitat from implementing this alternative. There would be a net gain in natural, high quality wildlife habitat because management of large areas of the East Unit would be focused on habitat restoration. These areas include the Little Calumet River corridor, the Great Marsh, and Furnessville. • Building a new visitor center, parking area, and access road would decrease the size of the woodland habitat between IN 49 and 50 East Road, south of U.S. 12. The development might cause reduced use of the area by wildlife species that need larger woodland tracts for foraging and breeding. • Building small parking areas for seeing the dunes and lakeshore and the hiking/bicycle trail from Mt. Baldy to the east end of Lake Front Drive, connecting existing trails and building a new access trail at Pinhook bog might prevent some animals from fully using the surrounding habitat. • There would likely be a net gain in fresh aquatic habitat.	• This alternative places less emphasis on specific habitat restoration areas than the preferred; overall its beneficial impact on wildlife habitat would be less than but similar to the preferred. • Constructing a one-way scenic shuttle road from Mt. Baldy to Lake Front Drive would mostly occur on existing roads. The road would require paving and would introduce higher numbers of people and vehicles, which potentially could disrupt certain species during resting or travel behavior along the road corridor. • Closing Howe and Mineral Springs Roads to through traffic would reduce the impact of cars on the Bailly Chellberg and Little Calumet River corridor, which might reduce mortality of species that forage in the road corridor.	• This alternative places its emphasis on a specific habitat restoration area; overall its beneficial impact on wildlife habitat would be less than but similar to the preferred. • Removing roads, fences, and the Kemil Beach parking and restrooms would reduce habitat fragmentation and enhance a continuous block of wildlife habitat. The movement of wildlife species within the larger habitat area would improve genetic viability. • Fencing Pinhook Bog would reduce unauthorized access to the bog, which would protect fragile vegetation from impacts. • Other actions, such as rerouting the Pinhook Bog trail and connecting and developing trails in the East Unit, would have the same impacts as those identified in the preferred alternative.

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Threatened and Endangered Species	• All development actions would comply with the Endangered Species Act and appropriate federal and state regulations and policies. • No direct negative impacts on threatened or endangered species would be expected. If such species or critical habitats were discovered, mitigation measures would be developed. • Closing ditches would improve or increase habitat for Blanding's turtle, sticky goldenrod, and some state-listed species. • Greatest potential threat to [illegible] special status species would be from people wandering off established trails and routes. Visitor education [illegible] this impact would [illegible]	• This alternative would manage the greatest area for habitat restoration; it would also have the most beneficial impacts on wildlife, including special status species.	• It would not be expected that any actions described in this alternative, including developing a one-way [illegible] from Mt. Baldy to Lake Front Drive and establishing new [illegible] points, would negatively impact threatened or endangered species or any critical habitat because existing roads, road [illegible] and other impacted areas would be used.	• Removing [illegible] and the Kemil Beach [illegible] restoration would [illegible] threatened species [illegible]
Impacts on Water Resources	• NPS commitment to ensure that, to the extent possible, [illegible] • [illegible] • [illegible]	• [illegible] • [illegible] • [illegible]	• [illegible] • [illegible]	• [illegible]

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	Impacts Common to All Alternatives	**Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience**	**Alternative A (No Action): Continue Existing Management Direction**	**Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience**
Impacts on Water Quality	• The Park Service would expand gathering of water quality and quantity data to locate and mitigate impacts. • Careful construction techniques, erosion plans, and mitigation measures would help prevent impacts. • Restoration projects should improve water quality in the Great Marsh and along the Lake Michigan shoreline.	• This alternative would restore the maximum wetland acreage, which would have the greatest positive impact on water quality.		
Impacts on Floodplains and Wetlands	• The wetland inventory, monitoring, and protection program would expand. • Strategies to restore damaged wetlands such as the Great Marsh to natural ecological functions would also [illegible]. • Development would be done on previously disturbed sites. • Facilities would be designed so there would be minimal impacts on floodplains and wetlands. • Closing ditches and installing culverts would restore surface water regimes and wetlands in the Great Marsh.	• This alternative restores the maximum wetland acreage in the Great Marsh and elsewhere. • Removing road fill and installing culverts through roads would reconnect areas of wetlands that were fragmented by road construction. • Removing unneeded ditches would restore natural groundwater levels. • Relocating Pinhook Bog parking would eliminate vehicle pollution runoff to the bog. • Closing roads would restore some wetland areas previously filled for roads.	• New beach access points would be designed to avoid wetlands and floodplains. • Pinhook Bog information station would be designed to avoid impacts on the bog where possible. If some wetland of bog area were to be impacted, mitigation measures would be formulated.	• Closing portions of East State Park Road, Lake Front Drive, and Beverly Drive and removing parts of other roads would restore some wetland areas previously filled for roads. • This alternative would restore less wetland than the preferred alternative. • Relocating Pinhook Bog parking would have the same impact as the preferred alternative. • Constructing/extending West Derby Drive would impact wetlands; mitigation measures would minimize impacts. • Building a marsh trail and parking would not impact wetlands because the facilities would be developed on areas that have already been impacted. Also, impacted areas not used for parking and trail development would be restored to natural conditions.

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Air Quality & Noise	• Construction would cause temporary local increases in particulates, vehicle exhausts and dust and noise. • [illegible] more than [illegible] of use that [illegible] air quality [illegible] would [illegible] number of motor vehicle trips to and from residences in the national lakeshore and the resultant emissions. • Relocation of a portion of U.S. 12 [illegible] and Sheridan Avenues would remove two at-grade railroad crossings of the South Shore Railroad, thus eliminating stopping and idling of traffic and the [illegible] emissions. • Expected additional visitation and related automobile traffic could cause slight increases in automobile emissions [illegible] but would not exceed [illegible] air quality standards.	• Relocation of the commercial truck traffic from the Dunes Highway would have effect on [illegible] connections to [illegible] parking facilities. • A shuttle would reduce automobile [illegible] • Noise would be reduced by removing heavy truck traffic from the Dunes Highway. • Heavy trucks would not [illegible] along the new route.	• This alternative proposes actions that would have the least impact on air quality and noise. U.S. 12 would continue to carry mixed traffic. Few roads are closed and the existing patterns of use remain. • The low-speed, one-way scenic shuttle tour route east of Beverly Shores would use the road portion of Lake Front Drive, Dune [illegible] or Beverly Drive. • This [illegible] shuttle would reduce [illegible]	• Locating the visitor center at Crescent Dune would increase traffic slightly in that area of the national lakeshore. Such an increase should not significantly increase emissions or noise. • Removing the Kemil Beach parking and access should result in an increase in traffic noise and emissions to other beach and [illegible] areas. • [illegible] • Increasing parking capacity at the Lake Front [illegible] localized [illegible]

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	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Scenic Quality	• Removing structures and unneeded roads and driveways [illegible] would reestablish a more natural scene. • Removing the [illegible] would make [illegible] with the surrounding scenery. • [illegible] would improve [illegible] scenic and natural appearance. • [illegible] • [illegible] • [illegible]	• Dunes Highway designation would include measures to improve scenery along that route. • There would be overall positive effects on scenic quality.	• Scenic quality along U.S. 12 would remain unchanged. • There would be overall positive effects on scenic quality.	• There would be no change to scenic quality along U.S. 12. • The area around [illegible] would be [illegible] natural [illegible]. • Closure and revegetation of [illegible] State Park Road would [illegible] segment [illegible]. • This alternative would [illegible]. • [illegible] Dunes [illegible] Lake Front Drive [illegible] Road would [illegible].
Impacts on Cultural Resources	• [illegible] • [illegible]			

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
[illegible]	• [illegible]	• The Bailly / Chellberg area would expand [illegible] • [illegible] • [illegible] • [illegible] • [illegible]	• The Bailly Homestead and Chellberg Farm structures would be adaptively used for interpretive purposes to preserve the structures. • [illegible] • [illegible] • [illegible] • [illegible] • [illegible]	• [illegible] Bailly Homestead and Chellberg Farm structures [illegible] • [illegible] • [illegible] • [illegible]

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Archeological Resources	• Based on the preliminary reports of the archeological surveys being conducted by the NPS Midwest Archeological Center, these actions would not impact archeological resources. • Before locations for facilities or routes for the new trails were determined, broad areas or corridors would be surveyed to determine the locations or routes that would be least damaging to archeological resources. • As the design of sites for proposed development and trail corridors would be mapped and [illegible] considered so that the developments would, where possible, avoid disturbing these sites. • If impacts on archeological sites could not be avoided, [illegible]			
Impacts on Cultural Landscapes	• [illegible]	• Expanding parking at the Bailly Homestead would impact the cultural landscape of the historic district.	• Relocating the [illegible] historic houses would [illegible] impact [illegible] associated with these historic properties.	• Relocating the [illegible] historic houses would [illegible] impact on the cultural landscapes associated with these historic properties.

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Access and Circulation				
Impacts on Traffic Safety	• Relocating U.S. 12 at Wilson and Stateline Avenues would improve safety by eliminating two at-grade crossings of the South Shore Railroad. This relocation would eliminate a dangerous intersection near Mt. Baldy at the intersection with Beverly Drive and County Line Road, where U.S. 12 is reduced from four lanes to two lanes. • [illegible] Mt. Baldy [illegible] • [illegible] U.S. 12 in the East Unit and implementing safety improvements would reduce the potential for accidents.	• Dunes Highway designation would improve safety by removing trucks, lowering speeds, installing signs, and making road improvements. Designation would also mean NPS acquisition of additional land along U.S. 12. • These actions would reduce distractions for drivers and permit them to drive into lakeshore [illegible] more easily. • U.S. 12 and U.S. 20 intersection improvements would likely accommodate increased traffic volume. • Rerouting U.S. commercial traffic [illegible] would only slightly increase traffic and the potential for accidents on IN 149, IN 249, and U.S. 20 because of their current type and high traffic volumes. • Safety at Mt. Baldy would improve [illegible] pedestrian and [illegible] • New Portage [illegible] parking would improve [illegible]	• U.S. 12 would remain a traffic concern and visitors would have difficulty maneuvering around the lakeshore in a typical and safe manner. • The hazardous travel of heavy trucks and recreational vehicles would continue on U.S. 12; accident potential from this use would continue and increase as traffic increases. • Safety concerns would [illegible] • Without [illegible] impacts [illegible] alternative. • Access to Portage Bay would remain [illegible]	• The impacts of this alternative would be similar to those of alternative C except for Portage Bay. • [illegible] Portage [illegible]

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	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Local Traffic Volumes	• Relocating a portion of U.S. 12 to Woodlawn and Sheridan Avenues would increase traffic on those two streets.	• Dunes Highway designation would reduce local traffic volume in some areas, it would attract more recreation travelers. • The removal of heavy trucks from the Dunes Highway would require them to travel slightly longer routes to reach sites near the Dunes Highway. • Rerouting heavy trucks from Dunes Highway would slightly increase truck traffic on U.S. 20 but not impact traffic flow because 20 is designed for the truck traffic. • Increased lakeshore visitation might increase traffic on some local roads, particularly in Beverly Shores. • A voluntary shuttle system might reduce local traffic volumes.	• Local traffic volumes would increase, as in the preferred alternative. • Westbound Beverly Drive traffic volume (Mt. Baldy to Broadway) would be less than eastbound volume because visitors would use the one-way scenic drive. • Closing Mineral Springs and Howe Roads to through traffic would inconvenience some drivers.	• Impacts would be similar to alternative A, and there would be increased traffic on U.S. 12 from East State Park Road to Broadway Avenue by closing East State Park Road. • Closing East State Park Road between Lake Front Drive and U.S. 12, Lake Front Drive from East State Park Road to the World's Fair houses, and Beverly Drive between East State Park Road and West Derby Drive would impact East Unit access and circulation. • Removal of the Kemil Beach facilities and roads serving them would increase traffic east of Derby. • The closure of Lake Front Drive west of Derby Avenue would limit opportunities to see the shoreline and would cause traffic increases east of Derby. • Additional shoreline access along Lake Front Drive could add additional use to that road. • Fairwater Dunbar parking would increase traffic on West Derby Drive. • Traffic volumes would increase on Broadway Avenue.

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Impacts Of Shuttle Services and Parking		• Lake View traffic congestion would be reduced by shuttle; some visitors could be inconvenienced by remote lots • Kemil Beach/Lake View shuttle service would require lease/purchase of four buses, an area for parking and staging • Shuttle service for Mt. Baldy and Central Beach would require a parking and staging area and shuttle vehicles • Mt. Baldy parking and road improvements would improve safety and traffic circulation	• Without a shuttle, traffic and parking congestion would continue at Kemil Beach, Rostone, Lake View, and Mt. Baldy and would intensify • Expanding parking at Mt. Baldy would have the same impacts as the preferred alternative. The existing access road to the expanded facilities at Mt. Baldy would not handle traffic flows as efficiently and safely as in the preferred alternative due to its connection to the existing entrance road/U.S. 12 at an acute angle • The circulating shuttle tour would decrease traffic volumes in the Central Beach / Mt. Baldy area and reduce the number of "windshield" tourists on local roads	• Because shuttle services would not be provided, parking demand at Rostone, Fairwater/Dunbar, Lake View and Mt. Baldy would continue to increase • The net loss of 37–47 spaces in the Kemil Beach, Fairwater, Dunbar, Rostone areas would exacerbate the shortage of parking in western Beverly Shores overall; however, there would be a net gain of 55–210 parking spaces in the East Unit • The increase in parking facilities and activity areas east of Broadway Avenue would increase traffic movements along Lake Front Drive and other access roads serving the parking areas
Impacts of Traffic Management: One Way Alternatives		• One-way designation of some streets in and near Beverly Shores by local jurisdictions would have advantages and disadvantages [illegible]	• There would be no new impacts on traffic management	• There would be no new impacts on traffic management

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Visitor Use				
Visitor Facilities and Interpretation	•Establishing Good Fellow overnight camp would provide enhanced educational opportunities for more school groups. • Outdoor interpretive media would help develop the public's sense of stewardship of the lakeshore resources. • Wayside exhibits and trail brochures would reduce visitor impacts by improving understanding, appreciation, and protection of resources along trails, at overlooks, and at picnic areas.	• The new visitor center at the intersection of U.S. 12 and IN 49 would improve overall orientation and interpretation for lakeshore visitors; at a major entrance to the lakeshore, center would be more accessible to visitors than the existing visitor center. • Center would be specifically designed to accomplish its purposes, having more exhibit space and better circulation than the existing visitor center. • The addition of a new visitor center would also enhance resource protection through increased understanding and appreciation of lakeshore resources. • Developing a new visitor center would permit the current visitor center to be used for environmental education programs. • The orientation and interpretation available at the center at Mt. Baldy would serve visitors coming from the east who do not use the IN 49 entrance. • Expanding the environmental education program would allow additional schools to participate	• Retaining the existing visitor center would continue the current problems of inadequate space, layout, and poor location. • Restoring the World's Fair homes to interpret experimental architecture of the 1930s would enhance the interpretation program at the national lakeshore by highlighting experimental architecture. • Restoring and interpreting a Lustron house would expand that story to include the post-World War II building boom. • Expanding the Dunewood Campground would provide additional sites and hookups, which would broaden opportunities for campers.	• Constructing a new visitor center at Crescent Dune would provide visitors with an outstanding opportunity for understanding shoreline dynamics and the interactions between industry and the national lakeshore and provide a spectacular view of the Lake Michigan shoreline. • A new visitor center would be designed specifically to provide orientation and interpretation to the center and take advantage of the location to interpret the park themes. • The addition of a new visitor center would also enhance resource protection through increased understanding and appreciation of lakeshore resources. • Removing the existing visitor center and turning the site for a trailhead and picnic area would provide visitors with an opportunity to continue using the trail system at the site. • Transferring ownership of the World's Fair and Lustron houses could reduce the opportunities for tours.

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Visitor Experience/ Interpretation (continued)		• Expanded environmental education programs would help develop the public's sense of stewardship about the park and, [illegible] would result in increasing the level of protection for national lakeshore resources. • Restoring the World's Fair houses to interpret experimentation in technology in the 1930s would enhance the interpretation program at the national lakeshore by highlighting experimental architecture. • Restoring and interpreting a Lustron house would expand the story to include the post-World War II building boom. • Expanding the Dunewood Campground would provide additional sites that would broaden opportunities to camp.		

	Impacts Common to All Alternatives	**Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience**	**Alternative A (No Action): Continue Existing Management Direction**	**Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience**
Visitor Experience	• Expanding environmental education programs would have positive impacts on younger generations by instilling a sense of stewardship about resources. • Expanding the trail system would provide more access and recreational opportunities for visitors. • [illegible] would be [illegible] through [illegible] placement [illegible] lakeshore. [illegible] • Removal of [illegible] would increase opportunities for visitors to experience natural settings.	• Specially designed visitor facilities and trails would more effectively interpret the resources, which would improve the visitor's experience. • Designating the Dunes Highway would improve the experience for visitors traveling through the national lakeshore by diverting heavy truck traffic, reducing speeds on a section of the Dunes Highway and improving the lakeshore [illegible]. • Improved access and visitor services and additional recreational opportunities would enhance the quantity and quality of visitor experiences. • Visitors seeking solitude and a natural setting would be better served. • The expansion of the Dunewood Campground would allow additional visitors to have an overnight experience in the local area. • The shelter for the historic South Shore Railroad cars would provide for the exhibition of the historic cars now in storage and would enhance the interpretation of the transportation heritage theme. • Accessibility for visitors with disabilities would be improved. • Shuttle services would expand visitor capacity, improve the visitor experience for some people and make it [illegible] visitor experience for others. • New boardwalk at Pinhook Bog would provide [illegible].	• Visitors would continue to have difficulty locating and using the existing visitor center. • The new visitor information station at Pinhook Bog and the relocation of the visitor facility at Mt. Baldy would provide additional information and orientation. • Visitors would be able to take architectural tours of the World's Fair and Lustron houses. • The interurban scenic shuttle east of Beverly Shores would make the scenery of the dunes and lakeshore more accessible. • Expanding the Dunewood Campground and providing hookups would allow additional visitors to camp and would appeal to a broader range of campers. • Visitors seeking solitude would not have experiences enhanced as much as under the preferred alternative.	• Providing a new visitor center with views of the dunes, shoreline, and Lake Michigan would enhance the visitor's opportunity to see the key features of the national lakeshore. • New facilities and parking would allow more visitors to enjoy the dunes and shoreline during the peak visitor season. • New lakefront parking would offset the loss of Kemil Beach parking but would displace Kemil Beach users to other sites.

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Socio-economic Environment	• Capital expenditures for the various development projects proposed in the alternatives would generate short-term positive economic impacts within the local and regional economies provided that goods and services were purchased within the local region. • The various projects would be phased, so these economic benefits would also occur in phases. • The proposed developments would probably create some temporary construction jobs. • Each alternative would provide a variety of [illegible] and [illegible] for the national lakeshore. Because of these additional [illegible] [illegible] the local economy would be minimal [illegible] the relatively large size of the [illegible] economy, but long-term [illegible]	• Short-term positive economic benefits in the form of increased jobs and development expenditures (about $24.1 million in 1995 dollars) for construction and development-related activities would occur with this alternative. • This alternative would create 65 FTE positions costing about $2.2 million annually (1995 dollars). The lakeshore's operating budget would need to be increased to cover the additional staffing costs. • Removing truck traffic from Dunes Highway might slightly increase trucking costs. • Removing commercial truck traffic from this portion of U.S. 12 would have little to no impact on the local economy because few businesses along the Dunes Highway are primarily dependent on heavy truck traffic. • Expanding and improving trail systems would increase visitor access, awareness, and open up more recreational opportunities.	• There would be short-term benefits from increased construction jobs and expenditures in the amount of $27.5 million (1995 dollars) for development. • This alternative would create 57 FTE positions costing nearly $2 million annually (1995 dollars) and have long-term benefits to the local economy. • Without a designated Dunes Highway, increases in tourism and tourist spending would not be as likely as expected under the preferred alternative. • The expansion of camping opportunities at Dunewood Campground would allow additional visitors to continue experiencing most of lakeshore accommodations. • Slightly less would be spent on [illegible] around the lakeshore. • Some visitor experiences would not be enhanced as much as in the preferred alternative. • Modifications proposed [illegible]	• There would be short-term benefits from increased construction jobs and expenditures in the amount of $23.5 million (1995 dollars) for development. • This alternative would create 50 FTE positions costing nearly $1.7 million annually (1995 dollars) and have long-term benefits for the local economy. • Some additional recreational opportunities would become available to the public. Overall the visitor experience offered by the national lakeshore would be enhanced.

	Impacts Common to All Alternatives	**Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience**	**Alternative A (No Action): Continue Existing Management Direction**	**Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience**
Impacts on Socioeconomic Environment (continued)		• The Dunes Highway could attract more tourists increasing expenditures at local businesses. • The effect of acquiring land along U.S. 12 would be to remove some real estate from the local tax jurisdictions. The amount of this removal should not significantly affect the local tax base. • Expanding Dunewood Campground would provide additional low-cost lodging. • Shuttle service proposed for Mt. Baldy could be provided by a private contractor as part of a more regional shuttle system connecting attractions in and near Michigan City.		

	Impacts Common to All Alternatives	Preferred Alternative: Maximize Resource Protection and the Diversity of the Visitor Experience	Alternative A (No Action): Continue Existing Management Direction	Alternative B: Expand Central Dunes Nature Preserve and Dispersed Visitor Experience
Impacts on Lakeshore Operations	• Operations costs would be increased by adding staff needed to overcome existing shortfalls and for new facilities, law enforcement, maintenance, and interpretation. • The workload at the lakeshore would be increased because of the interpretive activities, educational programs, and law enforcement and maintenance activities provided under the alternatives. • Relocating [illegible] maintenance functions would improve [illegible] staff travel time and [illegible] costs. • [illegible] other structures for NPS purposes such as [illegible] could [illegible] the need for new facilities construction. • [illegible] would increase staff time and funds for patrol and enforcement.	• Designating the Dunes Highway [illegible] would include acquisition of lands along the U.S. [illegible] purchased on a willing seller basis only, that are now outside the current lakeshore boundary. These lands would come under NPS jurisdiction and management. • Operating costs at the lakeshore would increase because of the need to staff new facilities, maintain the Dunes Highway, expand the interpretive programs and operate the shuttle system, and provide more law enforcement. • There would be capital expenses for added staff facilities, maintenance equipment, and visitor services. • Not clearing the Little Calumet River for canoeing would also reduce staff time and funds spent on this activity.	• Shuttle tour would facilitate access and use of the lakeshore, increasing visitation to some degree. • Operating costs at the lakeshore would increase because of the need to staff and maintain new facilities, expand the interpretive and environmental education programs and support maintenance and law enforcement activities.	• Operating costs at the lakeshore would increase because of the need to staff and maintain new facilities and expand the interpretive and environmental education programs and support maintenance and law enforcement activities. • Not clearing the Little Calumet River for canoeing would also reduce staff time and funds spent on this activity.

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INTRODUCTION

As required by the 1969 National Environmental Policy Act (NEPA) and section 106 of the National Historic Preservation Act, this section describes the environmental consequences associated with the three alternatives. It is organized by impact topics, which distill the issues and concerns into distinct topics for analysis. These topics focus the presentation of environmental consequences and allow a standardized comparison between alternatives based on the most relevant topics.

For the most part, impacts are addressed at a general level in this document because preliminary designs have not been prepared for each developed area. Although some acreage estimates are available, at this stage of planning generally only the number and general location of structures that would be removed or constructed are known, and an accurate estimate cannot be made of total acreage disturbance. Likewise, the restoration that would occur also can only be approximated. In assessing impacts, approximated areas of disturbance are analyzed where known. In other areas, rather than using acreage estimates of disturbance that would be likely to change during the design process, disturbance is quantified by giving the number of structures involved.

As future site development projects for the East Unit of Indiana Dunes National Lakeshore are funded and designed, the National Park Service will have details for the development proposals and alternatives, including the evaluation of impacts and the formulation of mitigation actions to avoid or minimize impacts on resources. Site-specific measurements of impacts resulting from the proposals in this document, especially the acreage of disturbance and impacts on wildlife, will be available after the preliminary design is prepared for each proposed site development. Therefore, because of the potential to affect national lakeshore resources, specific actions outlined in the alternatives of this document will require future compliance with the National Environmental Policy Act and section 106 of the National Historic Preservation Act.

The National Park Service will prepare site-specific development plans with environmental compliance documents, such as environmental assessments or categorical exclusions, for all future development plans as they are funded and designed. These environmental documents will quantify specific issues, proposals, and alternatives. The plans will also include impact topics specific to each development site and present estimates of impacts on wildlife, acreages of disturbance, required site restoration and revegetation, and mitigation measures that would be developed to avoid or minimize resource impacts.

Surveys would be conducted to identify any federal or state-listed threatened, endangered, candidate, or other listed species or critical habitats in areas of proposed development. To ensure compliance with the 1973 Endangered Species Act, as amended, further consultation with the U.S. Fish and Wildlife Service and the Indiana Department of Resources would be conducted as needed.

IMPACTS OF ACTIONS COMMON TO ALL ALTERNATIVES

Impacts that would be common under all alternatives are discussed in this section and are not included in the detailed analysis of each alternative. Generally, this section describes the type of impact that would be expected from proposed actions; the impact topic analysis under each alternative describes the quantity of impacts that would be expected or compares the level of impacts as they vary from alternative to alternative.

Before locations for facilities or precise routes for the new trails were designed, broad areas or corridors would be surveyed to determine the locations or routes that would be least damaging to resources. Critical habitat or cultural resources near proposed developments or trail corridors would be mapped and evaluated so that the developments would, whenever possible, avoid disturbing these sites.

IMPACTS ON NATURAL RESOURCES

Specific development concept plans or site development plans accompanied by environmental documents would be prepared in the future for some specific development, visitor use, and resource protection actions called for in these alternatives. These plans would assess alternative actions, provide specific details for development, and describe mitigating measures to avoid or minimize resource impacts.

It is important to note that although a number of new facilities or facility relocations are proposed in these alternatives, such facilities would be constructed on sites or in areas that have been previously disturbed. Previously disturbed areas are those that have been altered for human use. Such alterations include but are not limited to constructing ditches for wetland drainage, filling wetlands, trampling and clearing vegetation, farming, and altering the soil, including cuts and fills, plowing, foundation digging, compacting, additives for road and trail bases, and other modifications.

The direct, primary effects of each construction project would be impacts on vegetation, soils, wildlife, and water resources.

Impacts on Dune / Shoreline Ecosystem

The accelerated rate of beach and shoreline erosion is caused by sand starvation due to harbor developments. NPS policy directs that shoreline processes, such as natural erosion, deposition, and dune formation, be allowed to occur. The authority and responsibility for a beach nourishment program rests with the U.S. Army Corps of Engineers; however, the National Park Service supports and encourages an actively managed beach nourishment program to foster and promote a more natural sand replenishment regime. A program to actively promote a sand replenishment regime would benefit the beach and shoreline processes of the East Unit of the national lakeshore and Indiana Dunes State Park.

Porter Beach parking expansion and restrooms would not impact dune dynamics.

Increased visitor use could result in minor changes in dune vegetation stability. Site designs would minimize impacts from undesignated social trails created by visitors. Designated trails would be provided to minimize social trail development and reduce impacts on dunes and vegetation.

Impacts on Vegetation and Soils

Restored areas would be larger than areas occupied by new facilities; the new facilities would occupy disturbed, marginal habitat areas, and the areas to be restored would eventually provide mature vegetation and quality habitat resulting in a net gain in quality habitat over existing conditions.

Vegetation and soils would benefit because some disturbed, poor quality areas would be restored to higher quality, more natural conditions.

be reunited, habitats would be expanded, and barriers to wildlife movement would be removed.

Impacts on Threatened and Endangered Species

As stated under the "Mitigation Measures Common to All Alternatives" section, development associated with all alternatives in this plan has the potential to affect both federal and state special status species and/or some critical habitats. During the future planning process for site-specific development actions, consultation would take place with the U.S. Fish and Wildlife Service and the Indiana Department of Natural Resources.

Development sites would be surveyed for the presence of any special status species or designated critical habitats for such species. If such species or habitats were identified within areas of proposed construction, mitigation measures would be taken to avoid impacts; such mitigation measures would include relocating and/or redesigning facilities away from the species or habitats and implementing specific mitigation measures developed in consultation with the U.S. Fish and Wildlife Services and the Indiana Department of Natural Resources.

Closing drainage ditches would improve or increase habitat for wetland-dependent species such as Blanding's turtle, sticky goldenrod, and some state-listed species. Installing culverts and causeways through road fills and removing unneeded roads would provide connections between separated but adjacent habitat areas.

Essentially, however, the greatest potential threat to sessile or slow-moving special status species would be from people wandering off established paths and routes, potentially entering areas where sensitive species occur. Visitor awareness — through signs and other educational media and programs and well-identified and defined trails — could decrease the chances of such impacts.

Impacts on Water Resources

NPS guidelines mandate that, to the extent possible, long- and short-term adverse impacts on wetlands be avoided. The NPS goal is to achieve no net loss of wetlands as defined by both acreage and function.

Closing ditches would restore a more natural groundwater regime and increase the amount of water in the Great Marsh. Installing culverts and causeways through road fills and removing unneeded roads would restore a more natural surface water flow and groundwater recharge.

Water Quality. Baseline water quality and quantity data collecting would expand for all water resources in the national lakeshore. Measurements would include biotic and abiotic elements relating to water quality and quantity. The baseline data would be used to monitor water resources for possible future disturbances and to locate and mitigate existing and future impacts on national lakeshore watersheds.

Restoration projects should improve water quality in the Great Marsh and along the Lake Michigan shoreline.

Floodplains and Wetlands. Actions described in all alternatives would be planned and designed to avoid impacts on floodplains and wetlands; to a large degree, currently affected floodplains and wetlands would benefit from proposed actions.

The wetland inventory, monitoring, and protection program would expand. Strategies to restore damaged wetlands, such as at the Great Marsh, to natural ecological functions would also expand.

Buildings, parking areas, trails, and other facilities would be designed to avoid adverse impacts on surface water flow and/or surface runoff. Additionally, culverts under trails and roads could be used as needed to maintain existing surface flows and avoid the channelization or alteration of natural surface water regimes.

NPS staff would cooperate with local jurisdictions to restore wetland areas by closing drainage ditches.

previously impacted and are of fragmented and marginal habitat quality. There would be a net gain of quality habitat because the areas proposed for development are already disturbed and of marginal ecosystem value.

Additionally, removing barriers preventing the free flow of surface waters from marsh wetland habitats and installing culverts to foster the natural water flow would have a positive effect on both the wetland ecosystem and some amphibian species. The restored areas would eventually contribute to larger and more intact habitat tracts.

IMPACTS ON SCENIC QUALITY

Removing structures and unneeded roads and driveways associated with more than 400 expired reservations of use and occupancy would reestablish a more natural scene. Revegetating and restoring landscape contours would improve the Lakeshore's scenic and natural appearance.

Replacing portable toilets with permanent comfort stations at Porter Beach would improve the area's appearance; the expanded parking would not compromise the scenic quality.

Waysides could impact scenic areas; this impact would be mitigated by sensitive design and site selection. Brochures could add to litter problems.

IMPACTS ON CULTURAL RESOURCES

Future development actions would avoid sensitive areas through careful design. Whenever necessary, appropriate mitigation measures would be developed in consultation with the state historic preservation officer.

Impacts on Historic Resources

Using historic structures, as and where appropriate, would provide for their preservation and protection.

Impacts on Archeological Resources

Based on the preliminary reports of the archeological survey being conducted by the NPS Midwest Archeological Center, most actions would not impact archeological resources. Some actions in the preferred alternative might impact archeological resources.

Before locations for facilities or precise routes for the new trails were designed, broad areas or corridors would be surveyed to determine the locations or routes that would be least damaging to archeological resources. Archeological sites near proposed developments or trail corridors would be mapped and evaluated in terms of national register criteria so that the developments would, wherever possible, avoid disturbing these sites.

If impacts on archeological sites could not be avoided, the impacts would be mitigated through a data recovery program.

Impacts on Cultural Landscapes

Until the completion of the cultural landscape inventory currently being conducted by the Great Lakes System Support Office, it will not be possible to fully identify impacts. In those cases where impacts would occur, mitigation measures would be developed in consultation with the state historic preservation officer.

IMPACTS ON ACCESS AND CIRCULATION

Impacts on Traffic Safety

Relocating U.S. 12 via Woodlawn and Sheridan Avenues would improve safety by eliminating two at-grade crossings of the South Shore Railroad. It would eliminate a dangerous intersection near Mt. Baldy at the intersection with Beverly Drive and County Line Road, where U.S. 12 is reduced from four lanes to two lanes. Relocation would also facilitate access to Mt. Baldy by separating through traffic from lakeshore traffic.

Implementing intersection and other safety improvements along U.S. 12 in the East Unit would reduce the potential for accidents by improving sight distances, altering intersection angles, and providing better directional and informational signs.

Impact on Local Traffic Volumes

Relocating a portion of U.S. 12 via Woodlawn and Sheridan Avenues would increase traffic on those two streets.

IMPACTS ON VISITOR USE

Visitor Facilities and Interpretation

Establishing an overnight environmental education camp at the Good Fellow lodge would provide enhanced educational opportunities for an increased number of local and regional school groups who visit the lakeshore.

Outdoor interpretive media could help develop the public's sense of stewardship of lakeshore resources. Wayside exhibits and trail brochures would reduce visitor impacts by improving visitor understanding, appreciation, and protection of resources along new trails, overlooks, and picnic areas. The knowledge of interpretive themes, visitors experiences, and resource sensitivities would improve. Visitor use could also increase.

Visitor Experience

Expanding the environmental education program would have a positive impact on younger generations by instilling a sense of stewardship about natural and cultural resources.

Scenic intrusion by waysides would be minimized through their placement and design. Discarded brochures might contribute slightly to litter.

Expanding the trail system would provide more access and recreational opportunities for visitors. As facilities and infrastructure were removed and national lakeshore areas were returned to more natural conditions, there would be increased opportunities for visitors to experience natural settings.

Removal of expired reservations of use and associated roads and driveways would increase opportunities for visitors to experience natural settings.

IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

Capital expenditures for the various development projects proposed in the alternatives would generate short-term positive economic impacts within the local and regional economies provided that goods and services were purchased within the local region. Some of these required goods and services, including labor, would be obtained from the local three-county area, while others would come from the surrounding region. The various projects would be phased, so the economic benefits would also occur in phases. In addition, the proposed development would probably create some temporary construction jobs.

Each alternative would provide increased workload and staffing for the national lakeshore. However, impacts of these additional jobs on the overall regional economy would be minimal but long term because of the relatively large size of the regional economy.

Impacts on Minority and Low-income Populations — "Environmental Justice"

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires assessment of impacts on low-income and minority populations.

It was determined that none of the actions proposed in the alternatives would result in significant direct or indirect negative or adverse effects on any minority or low-income population or community

The following information contributed to this conclusion:

- The developments and actions proposed would not result in any identifiable adverse human health effects. Therefore, there would be no direct or indirect negative or adverse effects on any minority or low-income population or community.
- The impacts on the natural and physical environment that occur due to the implementation of any alternative would not significantly and adversely affect any minority or low-income population or community.
- The actions proposed under any alternative would not result in any identified effects that would be specific to any minority or low-income community.
- The National Park Service has had an active public participation program and has equally considered all public input regardless of age, race, income status, or other socioeconomic or demographic factors.
- Impacts on the socioeconomic environment from actions proposed in the alternatives would be mostly positive and occur mainly within the local and regional geographic area near the national lakeshore. These impacts would not occur at one time but would be spread over a number of years, thus mitigating their effects. Also impacts on the socioeconomic environment would not be expected to significantly alter the physical and social structure of the nearby communities.

IMPACTS ON LAKESHORE OPERATIONS

Operating costs at the lakeshore would increase because of the need to overcome the existing staffing shortfall and to staff and maintain new facilities and expand the resource management, interpretive, and education programs.

The workload at the lakeshore would be increased because of the resource management and interpretive activities, educational programs, and law enforcement and maintenance activities provided under the alternatives.

Lakeshore operations would be improved, and greater efficiencies would be achieved by removing the Furnessville maintenance facility and relocating the maintenance function to the headquarters area.

Adaptively using some structures for NPS purposes, such as housing, offices, research, or other administrative uses, would help improve lakeshore operations. Use would also help improve site security.

Closing roads, portions of roads, and ditches would decrease staff time and funds needed for patrol and maintenance.

IMPACTS OF THE PREFERRED ALTERNATIVE: MAXIMIZE BOTH RESOURCE PROTECTION AND VISITOR EXPERIENCE

In addition to the impacts described in the "Impacts Common to all Alternatives" section, impacts from implementing the preferred alternative would have the following effects.

IMPACTS ON NATURAL RESOURCES

Impacts on Dune / Shoreline Ecosystem

Impacts resulting from constructing the Crescent Dune trail would be minimal. The trail would be designed as a boardwalk or a boardwalk-like structure. This would avoid or minimize current pedestrian traffic on the dunes and vegetation, thus maintaining dune stability with little impact on dune ecology.

Constructing a picnic facility and parking area at the east end of Lake Front Drive would not create any new impacts on dune and shoreline dynamics. The developments would be behind the shoreline revetment on the disturbed areas of roads and nearby NPS-owned house sites; no new disturbance would be anticipated.

Constructing an accessible trail at Porter Beach to a hawk-watch overlook would avoid impacts on dune dynamics and erosion by using previously disturbed sites and avoiding cuts and fills wherever possible.

Building the trails and small parking areas for seeing the dunes and lakeshore and the hiking bicycle trail from Mt. Baldy to the east end of Lake Front Drive would avoid impacts on dune dynamics by using disturbed areas such as roads and road traces.

Previously impacted sites would be used if the Rostone and Florida Tropical Houses were relocated to the south side of Lake Front Drive. No new impacts would be expected beyond those impacts generated by moving facilities and site preparation.

Impacts on Vegetation and Soils

Emphasizing the restoration of natural resources in the Little Calumet River corridor, Cowles Bog, Furnessville, and Great Marsh areas would expand the acreage of high quality natural wetland habitat in the East Unit.

This alternative would expand the acreage of high quality natural wetland habitat in the East Unit more than the other alternatives. Expanding the role of fire in maintaining habitats would enhance the habitat in prairie pockets and savannahs.

Relocating the Pinhook Bog Trail would reclaim much of the area affected by the current boardwalk. The new boardwalk would impact a smaller area.

Constructing a new visitor center, parking lot, and trails near the intersection of U.S. 12 and IN 49 would disturb forested dunes and lead to loss of vegetation and habitat. Careful design of the development using previously disturbed sites and roads would minimize loss and ensure that the developments blend into the site.

Mitigation would be as identified in the "Mitigation Measures Common to All Alternatives" section. Also, restoring vacated and abandoned sites to natural conditions would offset the effects of new construction.

Impacts on Wildlife

Significant beneficial impacts on wildlife and habitat would be expected from implementing this alternative. There would most likely be a net gain in natural, high-quality wildlife habitat because management of large areas of the East Unit would be focused on habitat restoration. These areas include the Little Calumet River corridor, the Great Marsh, and Furnessville.

Building a new visitor center, parking area, and access roads would decrease the size of the woodland habitat between IN 49 and 50 East Road, south of U.S. 12.

Building small parking areas for seeing the dunes and lakeshore and the hiking/bicycle trail from Mt. Baldy to the east end of Lake Front Drive would prevent some animals from fully using the habitat east of Beverly Shores. The trail would encourage foot traffic, which could disrupt less tolerant species during nesting or foraging.

The habitat at all sites proposed for development have already been impacted (i.e., new construction would cause no new long-term impacts). Other disturbed areas would be restored to natural preconstruction conditions.

Impacts on Threatened and Endangered Species

Although no direct impacts on threatened or endangered species would be expected if this alternative were implemented, there would be general effects on wildlife directly associated with the loss or gain of habitat. These impacts apply to threatened, endangered, and sensitive species as well as wildlife with no special status.

Because this alternative would manage the greatest area for habitat restoration, it is expected to have the most beneficial impacts on wildlife, including special status species.

Impacts on Water Resources

Under this alternative impacts on water resources, including wetlands and floodplains, would be beneficial. No facilities are proposed that would result in wetland loss. Large areas of wetlands would be managed to improve habitat and resource values.

Water Quality. This alternative restores the maximum wetland acreage, which would have the greatest positive impact on water quality. Restoring areas of the Great Marsh would allow those areas to more effectively filter and purify the water. Removing unnecessary ditches would reduce the rate at which runoff enters Lake Michigan, allowing more time for natural processes to occur.

Wetlands and Floodplains. This alternative would restore the maximum wetland acreage in the Great Marsh and elsewhere. Removing road fill and installing culverts through roads would serve to connect areas of wetlands that were fragmented by road construction. Removing unneeded ditches would restore natural groundwater levels.

Relocating the parking area at the Pinhook Bog unit would eliminate vehicle pollutants from running into the wetland. Relocating the bog trail would allow the restoration of the existing trail and reclaim the area currently covered by the floating boardwalk trail.

Floodplains would not be expected to be affected by proposals in this alternative.

Impacts on Air Quality and Noise

Relocation of the commercial truck traffic from the Dunes Highway would help offset the slight increases in emissions due to expanded parking facilities. Implementing shuttle systems for Mt. Baldy and the Lake View and Kemil Beach areas would result in slight decreases in total automobile emissions.

Noise levels would be reduced by eliminating heavy commercial truck traffic on the designated Dunes Highway. Heavy truck traffic would be redirected to new routes but would not have a significant effect on the noise level along the new routes because they already have a high volume of heavy trucks.

Cumulative Impacts on Natural Resources

The preferred alternative would restore the greatest acreage of disturbed lands. Habitat restoration would improve wetlands in the Great Marsh, Little Calumet River corridor, and Furnessville. It would also improve large areas of upland woodlands.

through removal of reservations of use and occupancy and the expanded role of fire management. Prairie pockets would also benefit from the increased use of managed fire.

IMPACTS ON SCENIC QUALITY

Measures associated with the proposed Dunes Highway designation would improve the scenery along an 11-mile section of U.S. 12.

Closing removing roads and facilities and revegetating disturbed areas would especially reduce the amount of human intrusion into the natural landscape.

Overall, actions proposed in this alternative would have a positive effect on natural scenic resources. The cumulative effect of this alternative would be to slow the trend toward a human-dominated landscape somewhat and even reverse this trend in localized areas.

IMPACTS ON CULTURAL RESOURCES

Impacts on Historic Resources

Bailly Homestead, Chellberg Farm, and Swedish Farming District. Preserving the historic landscape at Chellberg Farm and interpreting the Swedish Farming District would enhance the interpretive stories presented at the site.

The Swedish Farming District and the inclusion of the landscape as an integral part of it would offer visitors a more accurate depiction of what rural life was like for this cultural group and would provide opportunities to more adequately interpret the rural and multiethnic character of the region.

There would be enhanced opportunities for visitors to understand the historic significance and activities at Bailly Homestead and Chellberg Farm.

Good Fellow Camp. Rehabilitating and using the lodge and other structures at Good Fellow Camp would ensure the preservation of these structures. This alternative would adaptively use and preserve the greatest number of the original camp structures. Using the lodge complex as a camp would continue a historic use.

World's Fair and Lustron Houses. Leasing would allow these buildings to be preserved. However, there would be some loss of historic integrity in the interior of these structures. This alternative would, to the greatest extent possible, preserve the houses and their context.

Relocating the Rostone and Florida Tropical Houses would save the structures from further deterioration in the event of increased erosion or rising lake levels.

Impacts on the Lustron houses would be the same as those identified for the World's Fair houses.

South Shore Railroad Cars. Using one or more of the South Shore Railroad cars for display would ensure their preservation and upkeep.

Impacts on Cultural Landscapes

Expanding the parking area at the Rostone House site would have a negative impact on the cultural landscape of the historic district. A more detailed identification of impacts would depend on the completion of a cultural landscape report for the historic district.

Cumulative Impacts on Cultural Resources

Cultural resources would be preserved and interpreted to the greatest extent under this alternative. This alternative would preserve the Swedish Farming District and propose it for national register listing; it would also rehabilitate most of the structures at the Good Fellow Camp, provide for the protection of the World's Fair houses in their existing location, and provide for the exhibition of the South Shore Railroad cars.

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IMPACTS ON ACCESS AND CIRCULATION

Impacts on Traffic Safety

Designating 11 miles of U.S. 12 as the Dunes Highway would improve safety for visitors and those passing through the lakeshore by prohibiting heavy commercial truck traffic, improving informational signs, reducing the speed limit to 45 mph, and improving the road. It would include acquisition of lands along the U.S. 12 right-of-way, purchased on a willing-seller basis only, that are now outside the national lakeshore boundary. These actions would reduce distractions for drivers and permit them to drive to lakeshore facilities more easily.

With the intersection improvements identified for U.S. 12 and U.S. 20 in the 1989 *Transportation Study*, the existing roadways and intersections would safely accommodate an increase in traffic volume.

Rerouting heavy commercial traffic onto alternative roadways would slightly increase traffic and the potential for accidents on IN 149, IN 249, and U.S. 20. The increased traffic and accident potential on these routes would be minimal because of their current capacities and high traffic volumes.

Traffic safety at Mt. Baldy would be increased by improving vehicle and pedestrian circulation.

New access and parking at Pinhook Bog would provide better sight distances for drivers entering or leaving and would decrease the chance of traffic collisions.

Impacts on Local Traffic Volumes

The designation of the Dunes Highway would be expected to reduce traffic volume somewhat on U.S. 12. Traffic volumes on U.S. 20 would be expected to increase very slightly over the same period. The level of service at U.S. 12 intersections would either remain at its current level or improve as a result of its redesignation, as indicated in the 1989 *Transportation Study*.

Designation of the Dunes Highway would reduce the overall volume of through traffic but would attract more recreational travelers to the route, especially during the summer months. Local residents and employees of area businesses and industries would not be significantly impacted.

The removal of heavy trucks from the Dunes Highway would require them to travel slightly longer routes to reach sites near the Dunes Highway. Because U.S. 20 closely parallels the proposed Dunes Highway, the length of the diversions would be minor. East-bound heavy trucks from the east gate of Bethlehem Steel would have to travel about 1.6 miles west on U.S. 12 to gain access to U.S. 20 via IN 149.

Traffic increases on U.S. 20 would not have a significant effect on traffic flow. U.S. 20 is designed as the primary truck route in the region. It is also the designated "Michigan Train" route, specifically to carry the extremely heavyweight trucks not permitted on interstate highways outside of Michigan.

The roads in and near Beverly Shores would be most affected by increases in visitor traffic. If traffic increases proportionately to recreation visits between 1993 and 2003 (56.5% is the highest expected rate of growth), the local roads in the area near Beverly Shores could accommodate the traffic at acceptable levels of traffic service.

If a voluntary shuttle system were in operation in the Lake View and Kemil Beach areas, traffic volumes would be expected to decrease on East State Park Road and Lake Front Drive west of Broadway Avenue.

Impacts of Shuttle Services / Parking

Traffic congestion could be reduced at Lake View because motorists bound for the beach could be intercepted and directed to remote lots. Some inconvenience and delay might be experienced by motorists when they were directed to the remote lots, but without the shuttle, parking spaces during high use times would not be readily available. A

Expanding the Dunewood Campground would provide additional sites which would broaden opportunities for campers.

Impacts on Visitor Experience

Specially designed facilities and trails would communicate important lakeshore stories and messages more effectively. Visitor services at the new visitor center would improve the visitor's experience.

Designating 11 miles of U.S. 12 as the Dunes Highway would improve safety for visitors and those passing through the national lakeshore by diverting heavy truck traffic. Reducing traffic speeds on a section of the Dunes Highway would also improve the visitor experience. Visitor recognition of the lakeshore would be enhanced, and the lakeshore identity would be improved by the designation of the Dunes Highway.

Improved access and visitor services, and additional recreation opportunities would enhance the quantity and quality of visitor experiences. Visitors seeking solitude and/or natural settings would be better served.

The expansion of camping opportunities at Dunewood Campground would allow additional visitors seeking a camping experience to have an overnight experience.

The exhibit for the restored South Shore Railroad cars would provide for the exhibition of the restored cars to visitors. It would enhance the interpretation of the transportation corridor theme. The exhibit facility could be a cooperative partnership with local community and private organizations.

Improvements for visitors with disabilities would enhance the recreational opportunities and visitor experiences available to this special population.

Shuttle service to the beaches would allow the lakeshore to accommodate more visitors at one time. Increased access to the beaches would improve the experience for some visitors; for others the quality of the experience might decrease due to increased crowding.

The new Pinhook Bog boardwalk would provide access to different resources than the existing boardwalk.

Cumulative Impacts on Visitor Use

Visitor use would be diversified in this alternative. Visitors would be encouraged to explore varied experiences beyond beach use.

IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

Short-term positive economic benefits in the form of increased jobs and development expenditures (about $24.6 million in 1995 dollars) for construction and development-related activities would occur with implementation of this alternative (see appendix C).

The increased workload that would result from implementing this alternative would require 65 new FTE positions at an annual cost of about $2.4 million (1995 dollars). The lakeshore's operating budget would need to be increased to cover the additional staffing costs.

Removing heavy trucks from 11 miles of U.S. 12 (the proposed Dunes Highway) might slightly inconvenience businesses who use heavy commercial trucks and might marginally increase the transportation costs of those carriers. However, removing commercial truck traffic from this portion of U.S. 12 would have little to no impact on the local commercial sector because no businesses along the Dunes Highway are primarily dependent on heavy truck traffic.

The Dunes Highway would probably attract more recreational travelers, especially during the summer. This might result in an increase in tourist expenditures at local businesses.

The shuttle service at Kemil Beach and Lake View would require the purchase or lease of three shuttle vehicles plus one standby vehicle. Overall costs might not vary substantially whether it is totally owned and operated by the National Park Service or leased and operated by an outside contractor.

Shuttle service proposed for Mt. Baldy could be provided by an outside contractor as part of a multi-point shuttle system connecting attractions in and near Michigan City.

The expansion of camping sites at Dunewood Campground would allow additional visitors seeking a camping experience (and or low-cost accommodations) to have an overnight experience in the local area.

Expanding and improving the national lakeshore's trail system would increase visitor access to resources and expand recreational opportunities for visitors.

Some social impacts would occur (e.g., increased environmental awareness and or cultural historic awareness, and significantly enhanced visitor experiences) that would in general be beneficial for the public and the national lakeshore.

Cumulative Impacts on the Socioeconomic Environment

The additional national lakeshore staff and the associated increased budget, along with phased development expenditures, would probably slightly contribute to improving the local economy.

The effect of acquiring land along U.S. 12 would be to remove some real estate from the local taxing jurisdictions. The amount of this removal should not significantly affect the local tax base.

The development of additional educational and recreational resources at the national lakeshore would contribute to the overall well-being and quality of life in the region. Protection and expansion of natural areas and greenspace would enhance the long-term habitability of the region as other areas outside the national lakeshore become increasingly developed. As a result of the emphasis on natural preservation, resources would be better protected and some visitors would be better served.

IMPACTS ON LAKESHORE OPERATIONS

Designating the Dunes Highway would include acquisition of lands along the U.S. 12 right-of-way purchased on a willing-seller basis only, that are now outside the national lakeshore boundary. These lands would come under the jurisdiction and management of the National Park Service.

Operating costs at the lakeshore would increase because of the need to staff new facilities, maintain the Dunes Highway, expand the interpretive program, operate and manage the shuttle system, and provide more law enforcement.

There would a capital expense to purchase materials for the added staff and additional highway maintenance equipment and materials. To provide shuttle service to the Kemil Beach and Lake View area would require the purchase or lease of four shuttle vehicles.

Not clearing the Little Calumet River for canoeing (i.e., removing fallen trees and logjams) would also reduce staff time and funds spent on this activity.

IMPACTS OF ALTERNATIVE A (NO ACTION): CONTINUE EXISTING MANAGEMENT DIRECTION

IMPACTS ON NATURAL RESOURCES

Development actions and management strategies would generally follow the existing management philosophy and direction set forth in the approved 1980 *General Management Plan* and subsequent approved plans such as the 1984 *Trail Plan*, the 1989 *Dunewood Campground Development Concept Plan*, and the 1991 *Little Calumet River Corridor Plan*. The environmental consequences of these [illegible] were analyzed in those documents.

[illegible] described in the "Impacts Common to All Alternatives" section, impacts from [illegible] alternative would have [illegible]

Impacts on Dune / Shoreline Ecosystem

[illegible] Mt. Baldy [illegible]

Impacts on Vegetation and Soils

[illegible]

[illegible]

Impacts on Wildlife

New development would occur on areas that are already impacted to some degree or another and that are not important wildlife habitat. Natural resource management would not be as specifically designed resulting in somewhat less emphasis on restoration than the preferred alternative.

Constructing a one-way scenic shuttle road from Mt. Baldy to Lake Front Drive would mostly occur on existing roads. The road would require paving and would introduce higher numbers of people and vehicles, which potentially could disrupt certain species during nesting or food foraging along the road corridor.

Closing Howe and Mineral Springs Roads to through traffic would reduce the impact of automobiles on the Bailly Chellberg and Little Calumet River corridor, which might reduce mortality of species that forage in the road corridors.

Impacts on Threatened and Endangered Species

It would not be expected that any actions described in this alternative, including designating a one-way scenic shuttle road from Mt. Baldy to Lake Front Drive and establishing new beach access points, would affect threatened or endangered species or any critical habitat because existing roads, road traces, and other impacted areas would be used.

Impacts on Water Resources

Impacts on water resources would be similar to those described in the preferred alternative. However, the Pinhook Bog access and parking lot would remain in its current location, which poses a potential threat of pollutant runoff into the bog.

Impacts on Air Quality and Noise

This alternative proposes actions that have the least beneficial impact on air quality and noise. U.S. 12 continues to carry mixed traffic. Few roads are closed, and the existing patterns of use remain

The low-speed, one-way scenic shuttle tour route east of Beverly Shores would use the east portion of Lake Front Drive, Drake, Montana or Beverly Drive. Providing a shuttle would reduce the casual "windshield" touring traffic on those roads and associated emissions and noise.

Cumulative Impacts on Natural Resources

Cumulative impacts on natural resources would be similar to those described in the same section of the preferred alternative. The basic philosophy of constructing new developments on previously impacted areas, relocating some facilities to previously impacted areas, and allowing vacated sites or abandoned sites to restore themselves naturally or be actively restored would continue. Although the number and size of developed and restored sites varies somewhat between the preferred and no-action alternatives, the net effect would be little if any impacts on previously unaffected land and a gain in high quality, productive habitat.

IMPACTS ON SCENIC QUALITY

The scenic quality along U.S. 12 would remain unchanged. Alternative A would have a positive cumulative effect on scenic quality similar to that described in the preferred alternative — slowing the trend toward a human-dominated landscape somewhat and reversing this trend in some areas.

IMPACTS ON CULTURAL RESOURCES

Impacts on Historic Resources

Bailly Homestead and Chellberg Farm. The structures at theses sites would be adaptively used for interpretive purposes. This would preserve the structures and provide for their interpretation.

Good Fellow Camp. The main lodge building would be the only structure to be preserved and adaptively used in this alternative. The other structures would be removed. Structures necessary for camp operations would be designed and built specifically to serve the intended functions. Removing the structures would have an adverse impact on the historic resources of the camp.

World's Fair and Lustron Houses. Relocating these houses would be costly and might have detrimental effects on their physical condition. Appropriate sites for these structures would have to be identified. The Rostone House may not be structurally sound enough to withstand relocation. However, the Rostone House is threatened by shoreline erosion, and failure to move the house would eventually result in its destruction.

Impacts on the Lustron houses, if eligible for the national register, would be similar to those described for the World's Fair houses. However these houses would be less likely to be structurally damaged by relocation.

Rehabilitating these houses for adaptive uses might adversely affect some of their historic fabric.

South Shore Railroad Cars. Restoring South Shore cars and maintaining them as exhibits would preserve the cars and make them available to the public.

Impacts on Cultural Landscapes

Some of the actions identified in this alternative might have negative impacts on cultural landscapes. Relocating the World's Fair houses would have a negative impact on the landscapes associated with these historic properties. These landscapes have evolved for more than 50 years and now have a historic significance of their own.

Cumulative Impacts on Cultural Resources

The use and protection of the structures at Bailly Homestead and Chellberg Farm would continue. Removing structures at the Good Fellow Camp and relocating World's Fair and Lustron houses would have adverse effects on the historic resources. Using the World's Fair and Lustron houses for interpretation would make them more available to the public than the preferred alternative. Exhibiting the South Shore Railroad cars would make them accessible to the public.

IMPACTS ON ACCESS AND CIRCULATION

Impacts on Traffic Safety

U.S. 12 would remain an area of traffic concern, and visitors would continue to have difficulty moving around the national lakeshore in a relaxed and safe manner.

The hazardous mix of heavy trucks and recreational vehicles would continue along U.S. 12. As the number of heavy trucks traveling on U.S. 12 increases, the potential for accidents involving heavy trucks and tourists would also increase. Safety issues would have to be addressed by local jurisdictions.

Access to Pinhook Bog would remain in its unsafe location, with poor sight distances.

Impacts on Local Traffic Volumes

Local traffic volumes would increase as in the preferred alternative.

Westbound Beverly Drive traffic volume (Mt. Baldy to Broadway) would be less than eastbound volume because visitors would use the one-way scenic drive.

Closing Mineral Springs and Howe Roads to through traffic would inconvenience some drivers.

Impacts of Shuttle Services / Parking

Without a transit center and shuttle, congestion would increase at the Kemil Beach, Rostone, Lake View, and Mt. Baldy parking areas. As demand increases, drivers unable to find a parking space would circulate on the existing road system.

The impacts from expanding parking at Mt. Baldy would be the same as described in the preferred alternative. The existing access road would not accommodate traffic flows as efficiently and safely as in the preferred alternative due to its geometry (the existing entrance meets U.S. 12 at an acute angle).

The interdunal shuttle tour would decrease traffic volumes in the Central Beach / Mt. Baldy area. It would reduce the number of windshield tourists on local roads.

Impacts on Traffic Management / One-Way Movements

There would be no new impacts on traffic management; current impacts would continue.

Cumulative Impacts on Access and Circulation

Without beach access shuttle services, vehicular circulation and parking congestion would impact Beverly Shores town roads — more so than in the preferred alternative.

IMPACTS ON VISITOR USE

Impacts of Visitor Facilities and Interpretation

Retaining the existing visitor center would continue the current problems of inadequate space and layout and poor location. Visitors would not be able to obtain the full range of interpretive services necessary at the visitor center.

Restoring the World's Fair houses to interpret experimental architecture of the 1930s would enhance the interpretation program at the national lakeshore by highlighting experimental architecture. Restoring and interpreting a Lustron house would expand that story to include the post–World War II building boom.

Expanding the Dunewood Campground would provide additional sites and hookups, which would broaden opportunities for campers.

Impacts on Visitor Experience

Visitors would continue to have difficulty locating and using the existing visitor center. The new visitor information station at Pinhook Bog and the relocation of the visitor facility at Mt. Baldy would provide new opportunities for information and orientation. Visitors would be able to take architectural tours of the World's Fair and Lustron houses.

The interdunal scenic shuttle east of Beverly Shores would make the scenery of the dunes and lakeshore more accessible.

Expanding the Dunewood Campground and providing hookups would allow additional visitors to camp and would appeal to a broader range of campers.

Visitor seeking solitude would not have experiences enhanced as much as under the preferred alternative.

Cumulative Impacts on Visitor Use

Visitor use would expand, and recreational and educational opportunities would increase. There would be less emphasis on visitor activities that favor solitude.

IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

Short-term positive economic benefits in the form of increased jobs and development expenditures (estimated at a very conceptual level at $27.5 million in 1995 dollars; see appendix C) for construction and development related activities would occur due to implementing this alternative.

This alternative would create additional workload for the national lakeshore staff and require about 57 additional full-time equivalent positions at an annual cost of nearly $2.2 million (1995 dollars).

Without a designated Dunes Highway, increases in tourism and tourist spending would not be as high as expected under the preferred alternative.

The expansion of camping opportunities at Dunewood Campground would allow additional visitors seeking a camping experience (and/or low-cost accommodations) to have an overnight experience.

The interdunal shuttle tour would facilitate access and use of the lakeshore, which could increase visitation. Except for interpretive, maintenance, and campground improvements, most other lakeshore facilities and programs would remain essentially the same as they are now. There would be no significant changes in current social impacts and experiences; some visitor experiences would not be enhanced as much as under the preferred alternative.

Cumulative Impacts on the Socioeconomic Environment

The additional national lakeshore staff and associated increased budget, along with short-term development expenditures, would contribute slightly to improving the local economy.

IMPACTS ON LAKESHORE OPERATIONS

An interdunal shuttle tour would facilitate the access and use of the lakeshore by some visitors, increasing visitation to some degree.

Operating costs at the lakeshore would increase because of the need to staff and maintain new facilities and expand the interpretive and environmental education programs and the maintenance and law enforcement activities.

IMPACTS OF ALTERNATIVE B: EXPAND CENTRAL DUNES NATURE PRESERVE AND DISPERSED VISITOR EXPERIENCE

IMPACTS ON NATURAL RESOURCES

In addition to the impacts described in the "Impacts Common to all Alternatives," section, impacts from implementing alternative B would have the following effects.

Impacts on Dune / Shoreline Ecosystem

Removing parts of East State Park Road and Lake Front Drive and the Kemil Beach parking lot and restrooms would help to reconnect, preserve, and restore the dunes and Great Marsh in this area to the greatest extent possible. The disturbed areas would be actively revegetated and managed in conjunction with the state nature preserve.

Impacts on dunes and shorelines would be minimized by careful facility design using existing disturbed areas, corridors, and traces for constructing the 25–50 space parking area at the Fairwater / Dunbar area, the 20–30 parking spaces at the Rostone House site, expanding Central Beach parking, building a new 25–50 space parking area at the east end of Lake Front Drive, adding two or three beach overlooks with 5–10 spaces each, and developing [illegible] Derby Road.

Constructing the picnic facility viewing development area at the east end of Lake Front Drive would avoid impacts and erosion by using previously disturbed sites and avoiding cuts and fills where possible.

Impacts on Vegetation and Soils

Removing parts of East State Park Road, Lake Front Drive, and Beverly Drive and removing parts of other roads and Kemil Beach parking would remove paving and fill material and restore soils and vegetation.

Constructing a new visitor center, parking lot, and trails at Crescent Dune would disturb a recovering dune area leading to a loss of vegetation and habitat. The access road would likely pass through a wooded dune area and require the removal of trees and the cutting and filling of soil. Careful design of the development using previously disturbed sites and roads would minimize loss and ensure that the developments blend into the site. Increased visitation to the area would potentially disturb the vegetation and lead to erosion of the dunes. Visitor use would have to be carefully managed to protect the fragile foredune ecosystem.

The impacts of relocating the Pinhook Bog trail, connecting and developing various trails in the East Unit, and constructing a small parking area at the Rostone House site under this alternative would have the same impacts as those described in the preferred alternative.

Constructing the picnic viewing area at the east end of Lake Front Drive would have a greater impact because the 20–40 additional parking spaces would impact more area.

Constructing parking spaces at the Fairwater / Dunbar areas (25–50 spaces) and Central Beach (25–50 spaces) and developing a parking area (5–10 spaces) for the marsh trail south of Beverly Drive and the new segment of West Derby Road would result in some soil disturbance and vegetation loss. Disturbance and loss would be minimal because these areas have been impacted by a variety of uses.

Because the NPS ranger residence at Pinhook Bog would be in an adaptively used structure or constructed on previously disturbed land, impacts resulting from this development would be minimal.

Impacts on Wildlife

Removing the roads and parking area serving Kemil Beach would reduce habitat fragmentation. Removing the road and fence barriers between the state park and the national lakeshore would restore a large block of continuous wildlife habitat. The movement of wildlife species within the larger habitat area would ensure greater genetic viability.

Fencing Pinhook Bog would reduce unauthorized access to the bog, which would protect fragile vegetation from impacts.

Other actions — such as rerouting the Pinhook Bog trail and connecting and developing trails in the East Unit — would have the same impacts as those identified in the preferred alternative.

Impacts on Threatened and Endangered Species

Removing portions of East State Park Road and Lake Front Drive and the Kemil Beach parking area would protect known and/or potential habitat of a threatened species.

Impacts on Water Resources

Other than floodplains and wetlands, impacts on water resources would be the same as those described in the preferred alternative.

Floodplains and Wetlands

Closing the East State Park Road between Lake Front Drive and U.S. 12 and Beverly Drive between East State Park Road and West Derby Drive would benefit wetlands by improving water flow and reducing fragmentation. However, this alternative focuses restoration on the Kemil area and does not restore the extent of wetlands called for in the preferred alternative.

Formalizing extending West Derby Road could affect a strip of wetlands adjacent to the existing roadway.

Developing a marsh trail and an accompanying 5-10 car parking area would not be likely to affect wetlands because the facilities would be developed on areas that have already been impacted. Also, impacted areas not used for parking and trail development could be restored to natural conditions.

Impacts on Air Quality and Noise

Relocating the visitor center to Crescent Dune would increase traffic slightly at that end of the park. Such an increase should not significantly increase emissions or noise. Removing the Kemil Beach parking and access should result in an increase in traffic noise and emissions to other beach and shoreline access areas. Adding the shoreline access areas east of Broadway would contribute to increased traffic emissions and vehicle noise locally.

Cumulative Impacts on Natural Resources

Creating a larger natural preserve within the dune shoreline community would have a long-term positive effect on natural dune shoreline processes.

This alternative would not enhance the restoration of natural resources as much as the preferred alternative because it focuses its restoration actions in a smaller area.

Roads, buildings, and parking areas have already contributed to ecosystem fragmentation at the national lakeshore. Removing some barriers from marsh wetland habitats would have a positive effect on both the wetland ecosystem and some amphibian species.

IMPACTS ON SCENIC QUALITY

There would be no change in scenic quality along U.S. 12.

The area immediately east of the state park would become more natural due to road closures; however, removing and revegetating East State Park Road would remove one of the most scenic stretches of roadway in the national lakeshore.

The overall effect of this alternative would be more development and less natural scenery along the shoreline, with the exception of the western portion of Lake Front Drive. Expanded parking near the Rostone House, at Fairwater Dunbar, overlooks on the north side of Lake Front Drive, the picnicking facility and parking near the east end of Lake Front Drive, at Mt. Baldy, and at Central Beach would contribute to this outcome. However, these developments would make it easier for visitors to enjoy shoreline scenery.

Cumulative Impacts on Scenic Quality

Because restorative efforts to close and revegetate roads would be localized and new or expanded facilities would be more widespread, alternative B would have little or no cumulative effect on the regional trend toward less natural scenery.

IMPACTS ON CULTURAL RESOURCES

Impacts on Historic Resources

Bailly Homestead and Chellberg Farm. Protecting the structures through leases with an appropriate public institution might provide more protection of the structures. It would, however, reduce the NPS control of the structures.

Good Fellow Camp. Removing structures would be considered an adverse effect on the historic resources of the camp.

World's Fair and Lustron Houses. Transferring ownership of the houses for relocation and preservation outside the national lakeshore boundary should ensure that the houses would be preserved. Full ownership rather than leasing should provide additional incentive for preservation of the structures. Transferring ownership and relocating the houses would be considered adverse effects.

South Shore Rail Road Cars. The cars would be offered to appropriate agencies or institutions for loan and exhibition because there are no plans to develop a facility to display the cars in or near the national lakeshore. This would, however, reduce the NPS control of the cars.

Impacts on Cultural Landscapes

Relocating the World's Fair and Lustron houses would result in some loss of landscape context.

Cumulative Impacts on Cultural Resources. The actions in this alternative would reduce the NPS control of the Bailly-Chellberg area, the World's Fair and Lustron houses, and the South Shore Railroad cars. However, several of these actions should provide more funding for preservation of those resources.

Transferring ownership and relocating structures would be considered to have adverse effects on the resources. Removing structures at Good Fellow Camp would have adverse impact on the historic resources.

IMPACTS ON ACCESS AND CIRCULATION

Removing the Kemil Beach facilities and roads serving them would increase traffic pressure east of Derby. Additional shoreline access along Lake Front Drive could add additional use to that road.

Impacts on Traffic Safety

Impacts would be similar to alternative A, but there could be increased traffic on U.S. 12 from East State Park Road to Broadway Avenue from closing East State Park Road.

At Pinhook Bog, the impacts of traffic safety measures (parking and access) would be the same as those described in the preferred alternative.

Impacts on Local Traffic Volumes

Impacts would be similar to those described in alternative A. However, an increase in traffic volumes on U.S. 12 between East State Park Road and Broadway Avenue might occur due to the closure of East State Park Road.

Removing East State Park Road between Lake Front Drive and U.S. 12, Lake Front Drive from East State Park Road to the World's Fair houses, and Beverly Drive between East State Park Road and West Derby Drive would impact East Unit access and circulation.

Removing the Kemil Beach facilities and roads serving them would increase traffic east of Derby. The closure of Lake Front Drive west of Derby Avenue would limit opportunities to see the shoreline and cause traffic increases east of Derby.

The introduction of vehicle travel on the proposed West Derby Drive to the proposed parking area in the Fairwater Dunbar area would result in traffic volume increases.

Traffic patterns on local roads east of Broadway Avenue and west of East State Park Road would basically remain the same. However, traffic volumes might increase on shoreline access roads east of Broadway Avenue due to increased parking. In general, traffic volumes would increase in proportion to the amount of shoreline visitation.

Traffic volumes would increase on Broadway Avenue between U.S. 12 and Beverly Drive, with a slight to moderate increase on Broadway Avenue between Beverly Drive and Lake Front Drive.

Although Broadway Avenue traffic between U.S. 12 and Beverly Drive could more than double, it could still accommodate the traffic and there would be no impact. The other affected road segments could also handle the reassigned volume of traffic.

Impacts of Shuttle Services / Parking

Because shuttle services would not be provided, parking demand at Kemil Beach and Lake View would continue to increase. The net loss of 37–47 spaces in the Kemil Beach areas would exacerbate the shortage of parking at the Kemil Beach and Lake View area. Overall, however, there would be a net gain of 55–210 parking spaces in the East Unit.

The increase in parking facilities and activity areas east of Broadway Avenue would increase traffic movements along Lake Front Drive and other access roads serving the parking areas.

Impacts on Traffic Management / One-Way Movements

Impacts on traffic management and one-way movements would be the same as those described under alternative A.

Cumulative Impacts on Access and Circulation

With the closure of some roads west of the Beverly Shores island, traffic would increase on other Beverly Shores town roads.

Without shuttle services, vehicular circulation and parking congestion would impact Beverly Shores town roads — more so than in the preferred alternative.

IMPACTS ON VISITOR USE

Impacts of Visitor Facilities and Interpretation

Constructing a new visitor center at Crescent Dune would provide visitors with an outstanding opportunity for understanding shoreline dynamics and the interaction between industry and the national lakeshore. The center would also provide a spectacular view of the Lake Michigan shoreline. At a major entrance to the national lakeshore, the center would provide visitors with the opportunity to plan their visits most effectively.

As in the preferred alternative, the new visitor center would be designed specifically to provide information and orientation to visitors. It would also take advantage of the location to interpret the national lakeshore themes. The addition of a new visitor center would also enhance resource protection through increased understanding and appreciation of lakeshore resources.

Removing the existing visitor center and reusing the site for a trailhead and picnic area would provide visitors with an opportunity to continue using the trail system at the site.

Transferring ownership of the World's Fair and Lustron houses could reduce the opportunity for tours.

Impacts on Visitor Experience

Providing a new visitor center with views of the dunes, shoreline, and Lake Michigan would enhance the visitor's opportunity to see the key resources of the national lakeshore.

New facilities and parking would allow more visitors to enjoy the dunes and shorelines during the peak visitor season. New lakefront parking would partially offset the loss of parking at Kemil Beach.

Cumulative Impacts on Visitor Use

This alternative would reduce beach access overall because of the closure of the Kemil facility.

Removing East State Park Road would eliminate one of the most scenic and popular drives in the lakeshore.

Providing a new visitor center at Crescent Dune would reorient the traffic flow in the national lakeshore to a more east to west flow because visitors would be directed to the visitor center first.

IMPACTS ON THE SOCIOECONOMIC ENVIRONMENT

Short-term positive economic benefits in the form of increased jobs and development expenditures (estimated at a conceptual level, without design plans, at $23.5 million in 1995 dollars) for construction and development-related activities would occur with implementation of this alternative (see appendix C).

Long-term gains in employment and national lakeshore expenditures would also accrue to the local economy due to the addition of 50 FTE positions at an annual cost of about $2.2 million (1995 dollars).

Some additional recreational opportunities would become available to the public. Overall, the visitor experience offered by the national lakeshore would be somewhat enhanced.

Cumulative Impacts on the Socioeconomic Environment

Removing beach access at the west end of Lake Front Drive by closing Kemil Beach parking facilities would only partly be offset by other parking areas. Providing additional shoreline access at sites along the hardened shoreline would provide opportunities to see the lake but would not provide beach access. The net effect would be a change in the number and kind of visitor experiences available.

Locating the visitor center near Michigan City is expected to have a positive impact on businesses in the west side of Michigan City.

IMPACTS ON LAKESHORE OPERATIONS

Operating costs at the lakeshore would increase because of the need to staff and maintain new facilities and expand the interpretive and environmental education programs and the maintenance and law enforcement activities.

Not clearing the Little Calumet River for canoeing would also reduce staff time and funds spent on this activity.

COMPLIANCE

Section 106 of the National Historic Preservation Act requires that federal agencies consider the effect of their actions on national register properties and allow the Advisory Council on Historic Preservation (ACHP) and the state historic preservation officer (SHPO) an opportunity to comment. The National Park Service will work with these entities to meet the requirements of 36 CFR 800 and the 1995 programmatic agreement among the National Conference of State Historic Preservation Officers, the advisory council, and the National Park Service. Under this agreement the National Park Service works closely with the state historic preservation office and the advisory council in planning for new and existing national park system areas and allows for their review of the project task directive, public review draft, and final documents.

This agreement also allows programmatic exclusions for specific actions that are most likely to have an adverse effect on cultural resources. Such actions may be implemented without further review by the state historic preservation officer or the advisory council if the National Park Service determines during internal review that the actions meet certain conditions. Undertakings not specifically excluded in the programmatic agreement must be reviewed by the state historic preservation officer and the advisory council during the design stage and before implementation.

The National Park Service will complete an assessment of effect on the cultural resources before implementing any proposed actions. This documents any project effects, outlines proposed mitigation, and documents that the action achieves the goals of the general management plan, as amended.

To ensure that proposals being considered in this document comply with the provisions of section 106, the advisory council and the state historic preservation office were invited to participate in the planning process. The state historic preservation office and the advisory council will have an opportunity to review and comment on the *Draft General Management Plan Environmental Assessment*.

Consultation with all American Indian groups who historically occupied the area of Indiana Dunes National Lakeshore also took place during the planning process. The tribes were invited to participate in this planning effort and will also have the opportunity to review and comment on the *Draft General Management Plan Environmental Assessment*.

As per the programmatic agreement among the National Park Service, the Advisory Council on Historic Preservation (ACHP), and the state historic preservation office (SHPO), there is to be a listing of actions that are either programmatic exclusions or that are subject to further ACHP or SHPO review and consultation. No actions proposed in this plan regarding the cultural resources are programmatic exclusions; all will require further ACHP and SHPO review.

Environmental assessments would accompany future site development plans for some specific development, visitor use, and resource protection actions. These documents would assess alternative actions, describe details for development actions, and include mitigating measures to minimize resource impacts.

STORM WATER RULE

The Storm Water Rule (40 CFR, parts 122, 123 and 124) requires that an Environmental Protection Agency (EPA) national pollution discharge elimination system (NPDES) notice of intent be submitted to the Environmental Protection Agency, with a copy sent to the appropriate state department of environmental quality, on construction activities in excess of 5 acres. This includes activities such as clearing and grading; such clearing and grading activities might affect stormwater discharge.

Additionally, the Environmental Protection Agency's NPDES process requires a storm water pollution prevention plan be developed before any ground-disturbing activities. This prevention plan is the guiding tool for preventing, minimizing, and mitigating soil erosion and water pollution during construction activities; the completed prevention plan must be available for public and agency inspection at the construction site.

ENVIRONMENTAL JUSTICE POLICY

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

For the purpose of fulfilling this executive order, in the context of the National Environmental Policy Act, the actions proposed in the alternatives addressed in this plan were assessed during the planning process. It was determined that none of these actions would result in significant direct or indirect negative or adverse effects on any minority or low-income population or community.

APPENDIXES / BIBLIOGRAPHY / PREPARERS

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APPENDIX A: DUNES HIGHWAY ANALYSIS — PREFERRED ALTERNATIVE

U.S. 12 is the major multipurpose road through the national lakeshore. It links the East and West Units of the lakeshore and provides access to lakeshore facilities. It is also a major carrier of local and regional traffic, including residential, recreational, and heavy commercial truck traffic. The diverse uses often conflict, creating safety problems and detracting from an enjoyable driving experience.

Current INDOT guidelines for evaluating new access requests would remain in effect, as would regulations prohibiting billboards in the right-of-way. Acceptance of the right-of-way would be subject to existing access easements.

The newly designated Dunes Highway would be managed to create a strong visual link to the national lakeshore. Maintenance methods along the road within the park would be standardized, including materials used, methods of mowing road shoulders, roadway vegetation, and uniform pavement striping.

The use of consistent materials and designs for guardrails, fences, and signs within the park would create a thematic identity with the national lakeshore. Unused structures and abandoned driveways on NPS property would be removed, and disturbed areas would be revegetated. Vegetation would be managed to enhance views, and native vegetation would be maintained.

Designation would increase visitor safety along the route, enhance scenery, and strengthen identity with the national lakeshore while preserving residential access and essential commercial services.

The National Park Service would work with utility companies to remove, bury or relocate utility lines away from the Dunes Highway.

The National Park Service would, when requested by communities, offer technical assistance to towns with property adjacent to the Dunes Highway right-of-way (the town of Pines, Beverly Shores, and Michigan City) to develop design standards that would strengthen the identity of their communities, as well as the national lakeshore. Communities would not be required to request such assistance or to implement any recommendations. Existing local land use controls would remain in effect unless a community chose to change them.

Implementing the safety guidelines described below and designating the Dunes Highway/U.S. 12 would require cooperation among the National Park Service, the Indiana Department of Transportation, and local governments.

- Commercial trucks exceeding 9,000 pounds gross vehicle weight would be prohibited on the proposed Dunes Highway from the east gate of Bethlehem Steel to Michigan City.
- Exceptions to this would be recreational vehicles and trucks making local deliveries, providing maintenance/repair, or being serviced at local businesses.
- All other trucks exceeding 9,000 pounds gross vehicle weight would be diverted to U.S. 20.
- Intersection design improvements would be made to safely accommodate this increased traffic, and U.S. 20 would receive dual designation as U.S. 12/20 from its intersection with U.S. 12 in Gary to U.S. 35 east of Michigan City. At that point U.S. 12 would follow the route of S.R. 212 northward to the existing U.S. 12 northeast of Michigan City.
- These designations would maintain a continuous route for U.S. 12. The former route of U.S. 12 through Michigan City and the Pines could be redesignated a new State Highway from the current 12/212 intersection to the 12/SR 520 intersection and connect via 520 to U.S. 12/20.
- Widening road shoulders where possible and improving intersections along U.S. 12 (including providing traffic signals and turn lanes, widening approaches, channeling traffic, and redesigning ramps) would reduce existing safety and congestion problems.
- Intersections that are not essential for emergency services, maintenance, or residential access would be closed.
- Information signs along the Dunes Highway (as well as other routes) would be improved.
- The speed limit on the 3-mile segment of the Dunes Highway between Oxford and Tremont would be reduced from 55 mph to 45 mph.

APPENDIX B: SHUTTLE OPERATIONS ANALYSIS — PREFERRED ALTERNATIVE

The shuttle service to Kemil Beach and Lake View would initially be provided on weekends and holidays during the summer. The service would begin when the existing parking areas reach capacity (around 10:00 A.M.) and stop in the evenings between 5:00 P.M. and 6:00 P.M. This type of weekend and holiday shuttle service, with 10–15 minute waits between shuttles, would be most efficiently provided by leasing school buses or transit vehicles not being used on weekends by school districts and municipal or regional transit systems.

Overflow parking lots would be used by beach visitors when existing parking lot capacities were reached. These overflow parking lots would be the shuttle staging areas and would be located as near to the beaches the shuttle is to serve as possible. The overflow parking could be on former [illegible] on Beverly Drive or on any of several potential sites along U.S. 12. The overflow parking demand for these sites would be [illegible] spaces, based on current beach use and considering the expansion of the parking area at the [illegible] House.

Similar shuttle service could be provided to Mt. Baldy from a remote staging area near the Dunes Highway (U.S. 12)/LaPorte County line intersection or from [illegible] property outside the lakeshore east of Mt. Baldy. Currently, parking capacity is exceeded at Mt. Baldy but not at Central Beach. Current parking demands might be met at Mt. Baldy with the addition of 25–50 parking spaces; with this expansion, shuttle service might not be immediately required. However, as demand increases, shuttle service could be tested at Mt. Baldy and Central Beach. The service characteristics of this route would be similar to those provided at Kemil Beach and Lake View.

As demand increases, shuttle system schedules could be expanded for use during weekdays during the summer. If demand rose sharply over existing beach use, use of the shuttle system might need to be mandatory during peak periods.

If all beach visitors were required to ride a shuttle to beaches, the parking lot and staging area requirements would become much greater, amounting to 320 to 350 spaces to serve Kemil Beach and Lake View and 220 to 250 spaces to serve Mt. Baldy with another route.

Visitors would be encouraged to arrive at the lakeshore via the South Shore Railroad and other transit services that might be provided by local and regional systems. The National Park Service would cooperate with these entities in planning for these services.

APPENDIX C: CONSTRUCTION COST ESTIMATES

TABLE E-1. CLASS C CONSTRUCTION COST ESTIMATE — PREFERRED ALTERNATIVE

	Gross Cost[1]	Advance & Project Planning Cost	Total Cost
Mt. Baldy Area	316	60	[illegible]
Campground Expansion	[illegible]	144	[illegible]
New Visitor Center	[illegible]	[illegible]	4,052
Good Fellow Camp Rehabilitation	[illegible]	[illegible]	[illegible]
Colonnade Lodge Removal	[illegible]	[illegible]	284
Porter Beach Area Improvements	[illegible]	48	[illegible]
Expand Riverside parking	[illegible]	15	[illegible]
Convert Visitor Center to Environmental Education Facilities	[illegible]	[illegible]	[illegible]
Furnessville Area Improvements	[illegible]	[illegible]	[illegible]
Maintenance Facility	[illegible]	[illegible]	[illegible]
Lake Front Drive Picnic Facilities and Parking	[illegible]	[illegible]	153
World's Fair Houses Relocation	200	[illegible]	[illegible]
Pinhook Bog Area	144	28	172
South Shore Railroad Car Display (including car transportation) and wooden access platforms	113	[illegible]	[illegible]
Other Hiking, Bicycling and Access Trails, Trailhead Parking and Facilities, and Overlook Platforms	[illegible]	[illegible]	[illegible]
Shuttle Parking Lot	[illegible]	[illegible]	[illegible]
TOTAL			**$24,601**

[1] These are Class C [illegible]

[2] Costs [illegible]

Estimated annual cost to operate a Lake View - Kemil shuttle: $119,003 (1994 dollars)
Estimated annual cost to operate a Mt. Baldy shuttle: $113,823 (1994 dollars)

TABLE F-2. CLASS C CONSTRUCTION COST ESTIMATE — ALTERNATIVE A

	Gross Cost[1]	Advance & Project Cost	Planning	Total Cost
[illegible]	[illegible]		27	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	1,250		235	1,485
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]		288	1,788
[illegible]	[illegible]		45	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]		1,341	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]		[illegible]	[illegible]
Total				$27,486

Actions called for in existing plans which are no longer considered feasible				
[illegible]	[illegible]		[illegible]	[illegible]
[illegible]				[illegible]
[illegible]				[illegible]
Total				75,786

[illegible]

[illegible]

[illegible]

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TABLE C-3. CLASS C CONSTRUCTION COST ESTIMATE FOR ALTERNATIVE B

	Gross Cost[1]	Advance & Project Planning Cost	Total Cost
Mt. Baldy - Mt. Baldy West Area	70	14	84
New Visitor Center	3402	680	4082
Good Fellow Camp Rehabilitation	4006	764	4770
Coronado Lodge Removal	212	41	253
Porter Beach Area Improvements	[illegible]	41	274
Remove existing visitor center and convert site to picnic area	126	24	150
Jamesville Area Rehabilitation	95	18	[illegible]
Maintenance Facility	[illegible]	274	1804
Crystal Beach parking expansion	130	25	155
Lake Front Drive Area Picnic Facility and Parking	245	47	292
Lake Overlooks and Parking, and Roadside Pullouts	180	[illegible]	[illegible]
Remove Kennel Area Facilities	[illegible]	[illegible]	[illegible]
Pollock Bay Area	692	132	824
Other Trails	215	41	256
Other Parking Areas / Access	220	42	262
Total			**$23,480**

1. These are class C conceptual estimates (in 1998 dollars (thousands)), which include construction supervision and administrative services. Exhibits, interpretive media, and furnishings are not included in estimates.

2. Costs for restoring natural habitats (including wetlands and wildlife species and mitigation measures) have not been determined. Costs for these actions would be identified at a later time, when quantities have been determined.

APPENDIX D: VEGETATION COMMUNITIES — EAST UNIT

DUNES COMMUNITY

Beach / Moving Dune / Blowout

This vegetation community has open, actively moving sand with little vegetation. Large unvegetated shifting dunes and blowouts with loose dry sand that has no plant cover.

Foredune

A community of marram grass and sand reed grass is usually the first continuous vegetation encountered back from the beach. These plants are adapted to shifting sand.

Little bluestem grass and cottonwood are usually in the open areas as well as in the marram grass / sand reed grass type and are often found in stabilized blowouts and disturbed sand dunes.

Jack pine typically occurs at the transition of the foredune to wooded dunes. Other conifer species in this area include cedar and Russian olive.

Prairie

This community occurs in open areas in the black oak savanna or as isolated patches in dry blowouts, or as small areas of prairie.

Wooded Dunes

Wooded dunes are stabilized dunes with well developed plant communities in which trees are common.

The pine-oak woodland is a community in which jack/white pine and black oak predominate the tree canopy.

Black oak forest has a continuous canopy cover dominated by black oak.

Black oak savanna is usually one of the most floristically diverse communities. This community differs from black oak forest in that the canopy is relatively open, and the herb layer contains many prairie grasses and forbs.

Mesophytic (intermediate water requirement) forest is a mature dune forest with a mixed canopy of upland species, usually occurring either as a transition zone between drier dune forests and wetlands or as mesic areas in dune swales where the water table is near the surface.

Mesophytic successional is young second-growth forest composed of a mix of early successional species such as red maple, green ash, and red elm.

Black oak shrub contains shrubby thickets of black oaks and other trees growing on dry, sandy areas or in remnants of disturbed black oak forest or savanna.

MORAINE COMMUNITIES

Moraine Forest

Beech-maple (oak-hickory) forest is dominated by white and red oak, one or more hickory species, maple, beech, and white ash.

Upland successional forest is second growth woodlands growing on well drained uplands of the moraine.

Moraine Shrubland

Old fields contain early stages of secondary succession following abandoned agricultural or pasture land. These areas are usually dominated by goldenrod and asters with shrubs and saplings beginning to invade.

WETLAND COMMUNITIES

Wetland communities grow in low lying or poorly drained areas that have seasonal flooding, continually wet soil, or standing water for at least 21 days of the year (hydromesophytic conditions). The areas may be forested or dominated by shrubs and/or herbs. Most of these plants cannot live without wet conditions for at least part of the year but some do not require continual wetness.

Swamp Forest

This forest type has a continuous canopy of large trees growing on continually saturated soils. The water in these areas comes from rainfall or seeping groundwater rather than stream overflow.

Hydromesophytic forest has the greatest woody species diversity of any plant community in the national lakeshore.

Hydromesophytic successional forest type is second-growth wet forest dominated by early successional tree species. Understory shrubs and herbs are characteristic of wetlands.

Pin oak flat forest is a distinctive community without much diversity. The forest canopy is dominated by pin oak and usually grows in very flat low-lying areas at the edge of marshes or where the water table is close to or just at the surface.

Cottonwood-willow forest is relatively old successional forest that formed after the Great Marsh was drained. The canopy is dominated by cottonwood and several willow species.

Floodplain Forest

Floodplain forests grow along the floodplains of streams or rivers that flood during times of heavy rain. Water comes from stream overflow and groundwater seepage, and they experience some scouring and some high silt accumulations.

Wet Shrubland

Wet shrub lands occur in and around the edges of the Great Marsh.

Aspen-willow scrub forest is second-growth wet shrubland dominated by aspen, willows, and young cottonwood and is developed after more recent disturbance.

Marsh and Sedge Meadow

Marshes and sedge meadow wetlands occur where water is usually deep enough to exclude woody species.

Trees and shrubs may be present on small rises and mounds but are widely scattered and do not dominate landscape.

Sedge meadow - wet prairie type is a diverse and increasingly rare sedge-, grass-, and rush-dominated community, usually found in undisturbed areas where the water table has not been affected by drainage or excessive fluctuations.

Fen

Plants in this community are associated with and maintained by a continuous flow of calcareous groundwater and a unique floating plant community. White cedar forest is a localized community restricted to the Cowles Bog (fen) mound area.

Seep zone - forested fen includes forested fen growing along an area of seeping groundwater. This is a very narrow community and is distinguished by several rare species.

Bog

Pinhook Bog is an extremely rare plant community in Indiana and is comprised of a floating mat of Sphagnum (peat) moss, tamarack trees, blueberries, leatherleaf, orchids, pitcher plant, sundew, and other rare plants. The water is acidic and there is no drainage out of this basin formed from a glacial ice block in the Valparaiso moraine.

Tamarack forest is localized and restricted to the edges of the Cowles Bog mound and Pinhook Bog areas. The canopy is dominated by tamarack with yellow birch, red maple, and slippery elm.

Agriculture

some areas of the East Unit were once farm fields for crop production or orchards, pastures, and pine plantations.

United States Department of the Interior

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January 9, 1995

Joel V. Kussman
National Park Service
Denver Service Center
12795 W. Alameda Parkway
Denver, Colorado 80225-0287

Dear Mr. Kussman:

This responds to your November 17, 1994 request for a list of Federally endangered and threatened species occurring in the East Unit of Indiana Dunes National Lakeshore, LaPorte and Porter Counties, Indiana.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U.S. Fish and Wildlife Service's Mitigation Policy.

FEDERALLY THREATENED AND ENDANGERED SPECIES

The following federally threatened and endangered species occur within LaPorte and Porter Counties:

Indiana bat (*Myotis sodalis*)- The Indiana bat uses woodland areas during the summer when maternity colonies utilize trees with loose bark for nesting. These bats forage primarily over wooded stream corridors, although they have been collected in grazed woodlots, mature deciduous forests, and pastures with trees. Ideal foraging habitat consists of a riparian corridor with at least 30 meters of woody vegetation on each bank.

Karner blue butterfly (*Lycaeides melissa samuelis*)- The Karner blue butterfly's habitat is characterized by the presence of wild lupine, *Lupinus perennis*, the species' only known larval food source. Typically the habitat is grassy openings within very dry, sandy pine/scrub oak barrens. In the midwest, the habitat is dry and sandy, but more prairie-like, including oak savanna and jack pine areas.

PROPOSED AND CANDIDATE SPECIES

The following candidate species are not afforded legal protection under the authorities of the Endangered Species Act of 1973, (as amended); however, federal agencies are encouraged to consider the species because the Fish and Wildlife Service (FWS) may proceed at any time with listing actions.

✓Loggerhead shrike (*Lanius ludovicianus*)- roadsides, brushy fencerows, and countryside.
✓Black tern (*Chlidonias niger*)- ponds, marshes, and wetlands.
✓Blanding's turtle (*Emydoidea blandingii*)- shallow, quiet, and warm water surrounded by grassland; small prairie ponds.
✓Eastern massasauga (*Sistrurus catenatus catenatus*)- marsh/lake areas; prairie forest transition zones.
✓Royal catchfly (*Silene regia*)- dry-prairie habitat; roadsides.
✓Cerulean warbler (*Dendroica cerulea*)- deciduous woodlands
~~Loggerhead shrike (~~*Lanius ludovicianus*)- roadside, open country, and brushy fencerows.
Sticky goldenrod (*Solidago spachulata*)- marsh areas

This does not preclude the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. As project plans become finalize, please contact our office for further consultation.

If we can be of further assistance, please contact Jennifer Szymanski at (812) 334-4261 ext. 204.

Sincerely yours,

Michael S. Litwin
acting
for David C. Hudak
Supervisor

cc: USFWS, Div. of Endangered Species, Fort Snelling, MN (K.Mitchell)
Mr. Dale Enguist, Superintendant IDNL, Porter, IN

DNR

INDIANA DEPARTMENT OF NATURAL RESOURCES PATRICK R. RALSTON, DIRECTOR

Division of Nature Preserves
402 W. Washington St., Rm. W267
Indianapolis, IN 46204
317-232-4052
Fax: 317-233-0133

January 23, 1996

Mr. Stephen E. Stone
National Park Service
Denver Service Center
12795 W. Alameda Parkway
P.O. Box 25287
Denver, CO 80225-0287

Dear Mr. Stone:

I am responding to your request for information on the endangered, threatened, or rare (ETR) species, high quality natural communities, and natural areas documented from the East Unit, Indiana Dunes National Lakeshore, Porter and Laporte Counties, Indiana. The Indiana Natural Heritage Data Center has been checked and enclosed you will find information on the ETR species and significant areas documented from the East Unit.

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973. You should contact the Service at their Bloomington, Indiana office.

U.S. Fish and Wildlife Service
620 South Walker St.
Bloomington, Indiana 47403-2121
(812)334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. For more information, please contact:

Patrick R. Ralston, Director
Department of Natural Resources
attn: Stephen H. Jose
Environmental Coordinator
Division of Fish and Wildlife
402 W. Washington Street, Room W273
Indianapolis, IN 46204
(317)232-4080

EQUAL OPPORTUNITY EMPLOYER

Please note that the Indiana Natural Heritage Data Center relies on the observations of many individuals for our data. In most cases, the information is not the result of comprehensive field surveys conducted at particular sites. Therefore, our statement that there are no documented significant natural features at a site should not be interpreted to mean that the site does not support special plants or animals.

Due to the dynamic nature and sensitivity of the data, this information should not be used for any project other than that for which it was originally intended. It may be necessary for you to request updated material from us in order to base your planning decisions on the most current information.

Thank you for contacting the Indiana Natural Heritage Data Center. You may reach me at (317)232-4052 if you have any questions or need additional information.

Sincerely,

Ronald P. Hellmich

Ronald P. Hellmich
Indiana Natural Heritage Data Center

enclosure: data sheets (9)

[illegible]

January [illegible], 1996

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

CHESTERTON QUADRANGLE

[illegible]	Element Name	Common Name	State Fed	Townrang Sec	Date Comments
IN... BAILLY UNIT - NATIONAL PARK SERVICE					
[illegible]	RANA PIPIENS	NORTHERN LEOPARD FROG	[illegible]		
[illegible]	PLATANTHERA CILIARIS	YELLOW FRINGED ORCHIS	SE		

DUNE ACRES QUADRANGLE

[illegible]	Element Name	Common Name	State Fed	Townrang Sec	Date Comments
IN... BAILLY UNIT - NATIONAL PARK SERVICE					
[illegible]	PINUS BANKSIANA	JACK PINE	SR		
IN... COWLES BOG - NATIONAL PARK SERVICE					
[illegible]	BETULA PAPYRIFERA	PAPER BIRCH	[illegible]		
[illegible]	PLATANTHERA CLAVELLATA	SMALL GREEN WOODLAND ORCHIS	[illegible]		
[illegible]	POLYGONELLA ARTICULATA	EASTERN JOINTWEED	SR		
[illegible]	[illegible]	LONG-EARED OWL	[illegible]		
[illegible]	BOTAURUS LENTIGINOSUS	AMERICAN BITTERN	[illegible]		
[illegible]	CISTOTHORUS PLATENSIS	SEDGE WREN	[illegible]		
[illegible]	IXOBRYCHUS EXILIS	LEAST BITTERN	[illegible]		
[illegible]	LANIUS LUDOVICIANUS	LOGGERHEAD SHRIKE	SE [illegible]		
[illegible]	NYCTICORAX NYCTICORAX	BLACK-CROWNED NIGHT-HERON	[illegible]		
[illegible]	RALLUS ELEGANS	KING RAIL	[illegible]		
[illegible]	WILSONIA CANADENSIS	CANADA WARBLER	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	AMBYSTOMA LATERALE	BLUE-SPOTTED SALAMANDER	[illegible]		
[illegible]	HEMIDACTYLIUM SCUTATUM	FOUR-TOED SALAMANDER	[illegible]		
[illegible]	LYCAEIDES MELISSA SAMUELIS	KARNER BLUE BUTTERFLY	[illegible]		
[illegible]	WETLAND - FEN, FORESTED	FORESTED FEN	[illegible]		
[illegible]	ARALIA HISPIDA	BRISTLY SARSAPARILLA	[illegible]		
[illegible]	CAREX LIMOSA	MUD SEDGE	[illegible]		
[illegible]	CAREX SEORSA	WEAK STELLATE SEDGE	SE		
[illegible]	CORNUS CANADENSIS	BUNCHBERRY	[illegible]		
[illegible]	CORNUS RUGOSA	ROUNDLEAF DOGWOOD	SR		
[illegible]	CYPRIPEDIUM CANDIDUM	SMALL WHITE LADY'S-SLIPPER	SE		
[illegible]	DROSERA INTERMEDIA	SPOON-LEAVED SUNDEW	[illegible]		
[illegible]	EUPHORBIA POLYGONIFOLIA	SEASIDE SPURGE	[illegible]		
[illegible]	JUNCUS BALTICUS VAR LITTORALIS	BALTIC RUSH	SR		
[illegible]	LINNAEA BOREALIS	TWINFLOWER	[illegible]		
[illegible]	MELAMPYRUM LINEARE	AMERICAN COW WHEAT	SR		
[illegible]	MYOSOTIS LAXA	SMALLER FORGET-ME-NOT	[illegible]		
[illegible]	PINUS BANKSIANA	JACK PINE	[illegible]		
[illegible]	PINUS STROBUS	EASTERN WHITE PINE	[illegible]		
[illegible]	PLATANTHERA HYPERBOREA	LEAFY NORTHERN GREEN ORCHIS	[illegible]		
[illegible]	POA PALUDIGENA	BOG BLUEGRASS	[illegible]		
[illegible]	RIBES HIRTELLUM	SMOOTH GOOSEBERRY	[illegible]		
[illegible]	THUJA OCCIDENTALIS	NORTHERN WHITE CEDAR	[illegible]		
[illegible]	TRICHOSTEMA DICHOTOMUM	FORKED BLUECURLS	SE		
[illegible]	CISTOTHORUS PLATENSIS	SEDGE WREN	[illegible]		
[illegible]	RALLUS LIMICOLA	VIRGINIA RAIL	[illegible]		
IN... [illegible] UNIT - NATIONAL PARK SERVICE					
[illegible]	[illegible]	[illegible] ASTER	[illegible]		

STATE: X=extirpated SE=endangered ST=threatened SR=rare SSC=special concern WL=watch list SG=significant
FED: LE=endangered LT=threatened LE,LT=different listings for specific ranges of species PE=proposed endangered PT=proposed threatened C1=proposed to be listed C2=species at risk C2N=specific populations at risk 3A=[illegible]
[illegible]

January 23, 1996

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

Type	Element Name	Common Name	State	Fed	Townrang Sec	Date	Comments
Plant	GENTIANA ALBA	YELLOW GENTIAN	SR				
Plant	JUNCUS PELOCARPUS	BROWN-FRUITED RUSH	ST				
Plant	JUNCUS SCIRPOIDES	SCIRPUS-LIKE RUSH	ST				
Plant	LYCOPODIUM TRISTACHYUM	DEEP-ROOT CLUBMOSS	[illegible]				
Plant	SCLERIA RETICULARIS	RETICULATED NUTRUSH	ST				
Plant	UTRICULARIA MINOR	LESSER BLADDERWORT	SE				
Plant	VIOLA BLANDA	SMOOTH WHITE VIOLET	WL				
Plant	PANAX TRIFOLIUS	DWARF GINSENG	SR				
[illegible]	INCISALIA IRUS	FROSTED ELFIN	[illegible]				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT			
Plant	HUDSONIA TOMENTOSA	SAND HEATHER	[illegible]				
Plant	MYOSOTIS LAXA	SMALLER FORGET-ME-NOT	[illegible]				
Plant	CAKILE EDENTULA VAR LACUSTRIS	AMERICAN SEA-ROCKET	WL				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT			
Plant	ELEOCHARIS MELANOCARPA	BLACK-FRUITED SPIKE-RUSH	ST				
Plant	EUPHORBIA POLYGONIFOLIA	SEASIDE SPURGE	WL				
Plant	FUIRENA PUMILA	DWARF UMBRELLA-SEDGE	ST				
Plant	JUNCUS SCIRPOIDES	SCIRPUS-LIKE RUSH	ST				
Plant	PINUS BANKSIANA	JACK PINE	SR				
Plant	POLYGONUM HYDROPIPEROIDES VAR OPELOUSANUM	NORTHEASTERN SMARTWEED	ST				
Plant	POTENTILLA ANSERINA	SILVERWEED	ST				
Plant	RHUS AROMATICA VAR ARENARIA	BEACH SUMAC	ST	C2			
Plant	RHYNCHOSPORA MACROSTACHYA	TALL BEAKED-RUSH	SE				
Plant	CORNUS RUGOSA	ROUNDLEAF DOGWOOD	SE				
Plant	JUNIPERUS COMMUNIS	GROUND JUNIPER	SE				
Plant	PRUNUS PENSYLVANICA	FIRE CHERRY	SE				
Plant	RHUS AROMATICA VAR ARENARIA	BEACH SUMAC	ST	C2			
Plant	SCIRPUS SMITHII	SMITH'S BULRUSH	SE				
Plant	PYROLA ROTUNDIFOLIA VAR AMERICANA	AMERICAN WINTERGREEN	SR				
Bird	EMPIDONAX ALNORUM	ALDER FLYCATCHER					
Reptile	EMYDOIDEA BLANDINGII	BLANDING'S TURTLE	SE	C2			
Reptile	OPHEODRYS VERNALIS	SMOOTH GREEN SNAKE	SE				
Amphibian	RANA PIPIENS	NORTHERN LEOPARD FROG	SSC				
Plant	ACTAEA RUBRA	RED BANEBERRY	ST				
Plant	ASTER JUNCIFORMIS	RUSHLIKE ASTER	SE				
Plant	CAREX ATHERODES	AWNED SEDGE	SE				
Plant	CAREX ATLANTICA SSP CAPILLACEA	HOWE SEDGE	SE				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT			
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT			
Plant	EPIGAEA REPENS	TRAILING ARBUTUS	WL				
Plant	ERIOCAULON SEPTANGULARE	PIPEWORT	ST				
Plant	ERIOPHORUM ANGUSTIFOLIUM	NARROW-LEAVED COTTON-GRASS	SR				
Plant	EUPHORBIA POLYGONIFOLIA	SEASIDE SPURGE	WL				
Plant	FUIRENA PUMILA	DWARF UMBRELLA-SEDGE	ST				
Plant	JUNCUS PELOCARPUS	BROWN-FRUITED RUSH	ST				
Plant	LUDWIGIA SPHAEROCARPA	GLOBE FRUITED	SE				

STATE	SX=extirpated, SE=endangered, ST=threatened, SR=rare, SSC=special concern, WL=watch list, SG=significant
FEDERAL	LE=endangered, LT=threatened, LELT=different listings for specific ranges of species, PE=proposed endangered, PT=proposed threatened, C1=proposed to be listed, C2=species at risk, C2NL=specific populations at risk, 3A=evidence of extinction, 3B=unclear taxonomy, 3C=delisted, E/SA=appearance similar to LE species

[illegible]

[illegible]

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

ID	Scientific Name	Common Name	State	Fed	Towrang Sec	Date Comment
		[illegible]				
[illegible]	[illegible]	DEEP ROOT [illegible]	ST			
[illegible]	NEMOPANTHUS MUCRONATUS	MOUNTAIN HOLLY	[illegible]			
[illegible]	PANICUM VERRUCOSUM	WARTY PANIC GRASS	[illegible]			
[illegible]	PLATANTHERA CLAVELLATA	SMALL GREEN WOODLAND ORCHID	[illegible]			
[illegible]	RHYNCHOSPORA SCIRPOIDES	LONG-BEAKED BALD-RUSH	[illegible]			
[illegible]	RHYNCHOSPORA MACROSTACHYA	TALL BEAKED-RUSH	[illegible]			
[illegible]	[illegible] RETICULARIS	RETICULATED NUTRUSH	[illegible]			
[illegible]	SPARGANIUM ANDROCLADUM	BRANCHING BUR-REED	[illegible]			
[illegible]	WOODWARDIA AREOLATA	NETTED CHAINFERN	[illegible]			
[illegible]	[illegible] CATENATUS [illegible]	EASTERN MASSASAUGA	[illegible]			
[illegible]	[illegible] REPENS	TRAILING ARBUTUS	[illegible]			
[illegible]	[illegible]	ONE-FLOWERED WINTERGREEN	[illegible]			
[illegible]	[illegible]	SMOOTH GOOSEBERRY	[illegible]			
[illegible]	[illegible]	STICKY GOLDENROD	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	KIRTLAND'S SNAKE	[illegible]			
[illegible]	RANA PIPIENS	NORTHERN LEOPARD FROG	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible] AMERICANUM	AMERICAN GOLDEN-SAXIFRAGE	[illegible]			
[illegible]	EPIGAEA REPENS	TRAILING ARBUTUS	[illegible]			
[illegible]	JUNCUS ARTICULATUS	JOINTED RUSH	[illegible]			
[illegible]	JUNCUS SCIRPOIDES	SCIRPUS-LIKE RUSH	[illegible]			
[illegible]	[illegible]	NORTHERN [illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	PLATANTHERA CLAVELLATA	SMALL GREEN WOODLAND ORCHID	[illegible]			
[illegible]	[illegible]	[illegible] MEADOW GRASS	[illegible]			
[illegible]	SPARGANIUM ANDROCLADUM	BRANCHING BUR-REED	[illegible]			
[illegible]	[illegible] ANAGALLIS-AQUATICA	BROOK PIMPERNEL	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]				
[illegible]	[illegible] SAND DRY-MESIC	DRY-MESIC SAND PRAIRIE	[illegible]			
[illegible]	SAVANNA - SAND DRY-MESIC	DRY-MESIC SAND SAVANNA	[illegible]			
[illegible]	[illegible] AMERICANA	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible] INTERMEDIA	SPOON-LEAVED SUNDEW	[illegible]			
[illegible]	[illegible] MELANOCARPA	BLACK-FRUITED SPIKE-RUSH	[illegible]			
[illegible]	FIMBRISTYLIS PUBERULA	CAROLINA FIMBRY	[illegible]			
[illegible]	GENTIANA ALBA	YELLOW GENTIAN	[illegible]			
[illegible]	[illegible] BICKNELLII	BICKNELL NORTHERN CRANE'S-BILL	[illegible]			
[illegible]	[illegible]	RUNNING PINE	[illegible]			
[illegible]	PINUS BANKSIANA	JACK PINE	SR			
[illegible]	[illegible] ARTICULATA	EASTERN JOINTWEED	[illegible]			
[illegible]	[illegible]	NORTHEASTERN SMARTWEED	[illegible]			
[illegible]	[illegible]	ELLIPTICAL LEAF WINTERGREEN	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]			

[illegible]

[illegible]=extirpated SE=endangered ST=threatened SR=rare SSC=special concern WL=watch list SG=significant
[illegible]=endangered [illegible]=threatened LELT=different listings for specific ranges of species PE=proposed endangered
[illegible]=proposed threatened [illegible]=proposed to be listed C2=species at risk C2NL=specific populations at risk 3A=evidence of extinction 3B=unclear taxonomy 3C=delisted E/SA=appearance similar to [illegible] species

January 23 1996

ENDANGERED THREATENED AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES INDIANA

Type	Element Name	Common Name	State	Fed	Towrang Sec	Date	Comments
Plant	CAREX ALATA	BROADWING SEDGE	WL				
Plant	LATHYRUS MARITIMUS VAR GLABER	BEACH PEAVINE	SE				
Bird	IXOBRYCHUS EXILIS	LEAST BITTERN	SE				
Bird	WILSONIA CANADENSIS	CANADA WARBLER	SSC				
Reptile	THAMNOPHIS PROXIMUS	WESTERN RIBBON SNAKE	SSC				
Amphibian	AMBYSTOMA LATERALE	BLUE SPOTTED SALAMANDER	SSC				
Amphibian	HEMIDACTYLIUM SCUTATUM	FOUR-TOED SALAMANDER	ST				
Amphibian	RANA PIPIENS	NORTHERN LEOPARD FROG	SSC				
Plant	AMELANCHIER HUMILIS	RUNNING SERVICEBERRY	SE				
Plant	ARCTOSTAPHYLOS UVA URSI	BEARBERRY	SR				
Plant	BETULA PAPYRIFERA	PAPER BIRCH	WL				
Plant	CAREX FOLLICULATA	LONG SEDGE	SE				
Plant	CAREX LEPTONERVIA	FINELY-NERVED SEDGE	SE				
Plant	CAREX SEORSA	WEAK STELLATE SEDGE	SR				
Plant	CHRYSOSPLENIUM AMERICANUM	AMERICAN GOLDEN-SAXIFRAGE	ST				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT			
Plant	CORNUS RUGOSA	ROUNDLEAF DOGWOOD	SR				
Plant	EUPHORBIA POLYGONIFOLIA	SEASIDE SPURGE	WL				
Plant	JUNIPERUS COMMUNIS	GROUND JUNIPER	SR				
Plant	PANAX TRIFOLIUS	DWARF GINSENG	SR				
Plant	BOTRYCHIUM MATRICARIIFOLIUM	CHAMOMILE GRAPE-FERN	ST				
Plant	CAREX DEBILIS VAR RUDGEI	WHITE EDGE SEDGE	ST				
Plant	CAREX FLAVA	YELLOW SEDGE	ST				
Plant	CAREX LEPTONERVIA	FINELY NERVED SEDGE	SE				
Plant	COMPTONIA PEREGRINA	SWEET FERN	WL				
Plant	ARCTOSTAPHYLOS UVA URSI	BEARBERRY	SR				
IDN	VISITOR CENTER UNIT	NATIONAL PARK SERVICE					
Bird	CIRCUS CYANEUS	NORTHERN HARRIER	SE				
Bird	LANIUS LUDOVICIANUS	LOGGERHEAD SHRIKE	SE	C2N			
Reptile	CLEMMYS GUTTATA	SPOTTED TURTLE	SE				
Reptile	SISTRURUS CATENATUS CATENATUS	EASTERN MASSASAUGA	ST	C2			
Plant	ARALIA HISPIDA	BRISTLY SARSAPARILLA	SE				
Plant	CAREX DEBILIS VAR RUDGEI	WHITE EDGE SEDGE	ST				
Plant	LATHYRUS OCHROLEUCUS	PALE VETCHLING PEAVINE	SE				
Plant	MILIUM EFFUSUM	TALL MILLET GRASS	SR				
Plant	MYOSOTIS LAXA	SMALLER FORGET ME NOT	SE				
Plant	ORYZOPSIS PUNGENS	SLENDER MOUNTAIN RICEGRASS	SX				
Plant	PANICUM MATTAMUSKEETENSE	A PANIC GRASS	SX				
Plant	THALICTRUM PUBESCENS	TALL MEADOWRUE	ST				
Plant	VERONICA ANAGALLIS-AQUATICA	BROOK PIMPERNELL	ST				
Plant	CAREX FOLLICULATA	LONG SEDGE	SE				
Plant	CAREX SEORSA	WEAK STELLATE SEDGE	SR				
Plant	ARISTIDA TUBERCULOSA	SEABEACH NEEDLEGRASS	SR				
Plant	LYCOPODIUM CLAVATUM	RUNNING PINE	WL				
Plant	LYCOPODIUM TRISTACHYUM	DEEP ROOT CLUBMOSS	ST				
Plant	PINUS BANKSIANA	JACK PINE	SR				
Plant	PYROLA ROTUNDIFOLIA VAR AMERICANA	AMERICAN WINTERGREEN	SR				
Plant	BETULA POPULIFOLIA	GRAY BIRCH	SX				
Plant	EPIGAEA REPENS	TRAILING ARBUTUS	WL				
Plant	LYCOPODIUM TRISTACHYUM	DEEP ROOT CLUBMOSS	ST				

STATE SX=extirpated SE=endangered ST=threatened SR=rare SSC=special concern WL=watch list SG=significant
FEDERAL LE=endangered LT=threatened LE,LT=different listings for specific ranges of species PE=proposed endangered PT=proposed threatened E=proposed to be listed C=species at risk C2N=taxon for populations at risk 3A=evidence of extinction 3B=unclear taxonomy 3C=de-listed E/SA=appearance similar to LE species

[illegible]

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE [illegible] UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

[illegible]	Element Name	Common Name	State	Fed	Township/Ran	Date	Comments
[illegible]	POPULUS BALSAMIFERA	BALSAM POPLAR	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		
[illegible]	PANAX QUINQUEFOLIUS	AMERICAN GINSENG	[illegible]		[illegible]		
[illegible]	PANAX TRIFOLIUS	DWARF GINSENG	[illegible]				
[illegible]	POLYGONELLA ARTICULATA	EASTERN JOINTWEED	[illegible]				

INDIANA DUNES STATE PARK [illegible]

[illegible]	Element Name	Common Name	State	Fed	Township/Ran	Date	Comments
[illegible]	PLATANTHERA CLAVELLATA	SMALL GREEN WOODLAND ORCHID	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]				

[illegible]

Page [illegible]

January 23 1996

ENDANGERED THREATENED AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES INDIANA

Type	Element Name	Common Name	State	Fed	Townrang	Sec	Date	Comments
Amphibian	HEMIDACTYLIUM SCUTATUM	FOUR-TOED SALAMANDER	ST					
High Quality Community	FOREST - UPLAND DRY	DRY UPLAND FOREST	SG					
Plant	ASTER JUNCIFORMIS	RUSHLIKE ASTER	SR					
Plant	CAKILE EDENTULA VAR LACUSTRIS	AMERICAN SEA-ROCKET	WL					
Plant	CAREX PEDUNCULATA	LONGSTALK SEDGE	SR					
Plant	CHIMAPHILA UMBELLATA SSP CISATLANTICA	PIPSISSEWA	ST					
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	ST	LT				
Plant	CLINTONIA BOREALIS	CLINTON LILY	[illegible]					
Plant	CYPRIPEDIUM CALCEOLUS VAR PARVIFLORUM	SMALL YELLOW LADY'S-SLIPPER	SR					
Plant	MILIUM EFFUSUM	TALL MILLET-GRASS	SR					
Plant	PANAX TRIFOLIUS	DWARF GINSENG	SR					
Plant	PLATANTHERA PSYCODES	SMALL PURPLE FRINGE ORCHIS	SR					
Plant	PYROLA ELLIPTICA	ELLIPTICAL-LEAF WINTERGREEN	WL					
Plant	RHUS AROMATICA VAR ARENARIA	BEACH SUMAC	ST	[illegible]				
Plant	SALIX CORDATA	HEARTLEAF WILLOW	ST					
Plant	SOLIDAGO SIMPLEX VAR GILLMANII	STICKY GOLDENROD	ST	[illegible]				
Reptile	SISTRURUS CATENATUS CATENATUS	EASTERN MASSASAUGA	[illegible]	[illegible]				
Plant	CAREX ATHERODES	AWNED SEDGE	[illegible]					
Plant	CAREX FOLLICULATA	LONG SEDGE	[illegible]					
Plant	BETULA PAPYRIFERA	PAPER BIRCH	WL					
Plant	BOTRYCHIUM MATRICARIIFOLIUM	CHAMOMILE GRAPE-FERN	ST					
Plant	CAREX ALATA	BROADWING SEDGE	WL					
Plant	CHRYSOSPLENIUM AMERICANUM	AMERICAN GOLDEN-SAXIFRAGE	ST					
Bird	DENDROICA CERULEA	CERULEAN WARBLER	SSC	C2				
Bird	LANIUS LUDOVICIANUS	LOGGERHEAD SHRIKE	SE	CON.				
Bird	MNIOTILTA VARIA	BLACK-AND-WHITE WARBLER	SSC					
Bird	RALLUS ELEGANS	KING RAIL	SE					
Bird	WILSONIA CANADENSIS	CANADA WARBLER	SSC					
Reptile	EMYDOIDEA BLANDINGII	BLANDING'S TURTLE	SE	C2				
Reptile	OPHEODRYS VERNALIS	SMOOTH GREEN SNAKE	ST					
Plant	BAPTISIA TINCTORIA	YELLOW WILD INDIGO	WL					
Plant	EPIGAEA REPENS	TRAILING ARBUTUS	WL					
Plant	MILIUM EFFUSUM	TALL MILLET-GRASS	SR					
Plant	MYOSOTIS LAXA	SMALLER FORGET-ME-NOT	[illegible]					
Plant	PANAX TRIFOLIUS	DWARF GINSENG	SR					
Plant	PLATANTHERA FLAVA VAR HERBIOLA	PALE GREEN ORCHIS	WL					
Plant	PLATANTHERA PSYCODES	SMALL PURPLE FRINGE ORCHIS	SR					
Plant	POA ALSODES	GROVE MEADOW GRASS	SR					
Plant	POA PALUDIGENA	BOG BLUEGRASS	WL	[illegible]				
Plant	POLYGONELLA ARTICULATA	EASTERN JOINTWEED	[illegible]					
Plant	PRUNUS PENSYLVANICA	FIRE CHERRY	[illegible]					
Plant	PYROLA ROTUNDIFOLIA VAR AMERICANA	AMERICAN WINTERGREEN	[illegible]					
Plant	SISYRINCHIUM MONTANUM	STRICT BLUE-EYED GRASS	[illegible]					
High Quality Community	WETLAND - MARSH	MARSH	SG					
High Quality Community	WETLAND - SWAMP SHRUB	SHRUB SWAMP	SG					

STATE: XX=extirpated SE=endangered ST=threatened SR=rare SSC=special concern WL=watch list SG=significant
FEDERAL: LE=endangered LT=threatened LE,LT=different listings for specific ranges of species PE=proposed endangered PT=proposed threatened C=proposed to be listed C2=species at risk CON=specific populations at risk 3A=evidence of extinction 3B=unclear taxonomy 3C=delisted E/SA=appearance similar to listed species

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

[illegible]	Scientific Name	Common Name	State Stat.	Federal Stat.	Date Observed
[illegible]	[illegible]	[illegible]	[illegible]		

[illegible]

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January 23 1996

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

Type	Element Name	Common Name	State	Fed	Townrang Sec	Date	Comments
Plant	CAREX FOLLICULATA	LONG SEDGE	SE				
Plant	CHRYSOSPLENIUM AMERICANUM	AMERICAN GOLDEN SAXIFRAGE	ST				

MICHIGAN CITY WEST QUADRANGLE

CONL HERON ROOKERY UNIT (NATIONAL PARK SERVICE)

Type	Element Name	Common Name	State	Fed	Townrang Sec	Date	Comments
Bird	ARDEA HERODIAS	GREAT BLUE HERON	SSC				
Plant	CAREX PEDUNCULATA	LONGSTALK SEDGE	SE				
Plant	VALERIANELLA CHENOPODIIFOLIA	GOOSE-FOOT CORN-SALAD	SE				

CONL KEISER UNIT (NATIONAL PARK SERVICE)

Type	Element Name	Common Name	State	Fed	Townrang Sec	Date	Comments
Bird	WILSONIA CITRINA	HOODED WARBLER	SSC				
Plant	ARISTIDA INTERMEDIA	SLIM-SPIKE THREE-AWN GRASS	SE				
Plant	CAKILE EDENTULA VAR LACUSTRIS	AMERICAN SEA ROCKET	[illegible]				
Plant	PANAX TRIFOLIUS	DWARF GINSENG	SR				
Plant	PRUNUS PENNSYLVANICA	FIRE CHERRY	SR				
Bird	EMPIDONAX ALNORUM	ALDER FLYCATCHER					
Bird	RALLUS ELEGANS	KING RAIL	SE				
Reptile	CLEMMYS GUTTATA	SPOTTED TURTLE	SE				
Plant	CLINTONIA BOREALIS	CLINTON LILY	[illegible]				
Plant	TRILLIUM CERNUUM VAR MACRANTHUM	NODDING TRILLIUM	SE				

CONL TAMARACK UNIT (NATIONAL PARK SERVICE)

Type	Element Name	Common Name	State	Fed	Townrang Sec	Date	Comments
Plant	CAREX [illegible]	[illegible] SEDGE	SR				
Plant	[illegible]	[illegible]	[illegible]				
Plant	VIOLA PRIMULIFOLIA	PRIMROSE-LEAF VIOLET	SR				
Plant	[illegible]	[illegible]	[illegible]				
Plant	PRUNUS PENNSYLVANICA	FIRE CHERRY	[illegible]				
Bird	RALLUS LIMICOLA	VIRGINIA RAIL	SSC				
Plant	[illegible]	AMERICAN [illegible]	[illegible]				
Plant	[illegible]	[illegible]	[illegible]				
Plant	CAREX [illegible]	[illegible] SEDGE	[illegible]				
Plant	[illegible]	[illegible]	[illegible]				
Plant	CHRYSOSPLENIUM AMERICANUM	AMERICAN GOLDEN SAXIFRAGE	[illegible]				
Plant	[illegible]	[illegible]	[illegible]				
Plant	CAREX [illegible]	[illegible] SEDGE	[illegible]				
Plant	[illegible]	[illegible]	[illegible]				

[illegible]

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January 23, 1996

ENDANGERED, THREATENED, AND RARE SPECIES
AND HIGH QUALITY NATURAL COMMUNITIES AND NATURAL AREAS DOCUMENTED FROM
THE EAST UNIT OF THE INDIANA DUNES NATIONAL LAKESHORE
PORTER AND LAPORTE COUNTIES, INDIANA

Type	Element Name	Common Name	State	Fed.	Townrang Sec	Date	Comments
Plant	CAREX ALATA	BROADWING SEDGE	WL				
Plant	CAREX FOLLICULATA	LONG SEDGE	[illegible]				
Plant	EPIGAEA REPENS	TRAILING ARBUTUS	WL				
Plant	PYROLA ELLIPTICA	ELLIPTICAL-LEAF WINTERGREEN	WL				
Plant	SCLERIA PAUCIFLORA	FEW-FLOWER NUTRUSH	[illegible]				
Plant	MELAMPYRUM LINEARE	AMERICAN COW-WHEAT	[illegible]				
Plant	STIPA AVENACEA	BLACKSEED NEEDLEGRASS	[illegible]				
Plant	CIRSIUM PITCHERI	DUNE THISTLE	[illegible]	[illegible]			
Plant	ARENARIA STRICTA	MICHAUX'S STITCHWORT	[illegible]				
Plant	[illegible] VAR. [illegible]	AMERICAN [illegible]	[illegible]				
Plant	DIERVILLA LONICERA	NORTHERN BUSH-HONEYSUCKLE	[illegible]				
Plant	EPIGAEA REPENS	TRAILING ARBUTUS	WL				
Plant	EUPHORBIA POLYGONIFOLIA	SEASIDE SPURGE	WL				
Plant	JUNIPERUS COMMUNIS	GROUND JUNIPER	[illegible]				
Plant	HYPERICUM KALMIANUM	KALM'S ST. JOHN'S-WORT	[illegible]				
Plant	PINUS BANKSIANA	JACK PINE	[illegible]				
Plant	SOLIDAGO SIMPLEX VAR. GILLMANII	STICKY GOLDENROD	[illegible]	[illegible]			

~~[illegible]~~

Type	Element Name	Common Name	State	Fed.	Townrang Sec	Date	Comments
[illegible]	SPIRAEA [illegible]	WHITE [illegible] MOUNTAIN [illegible]	[illegible]				

[illegible]VILLE QUADRANGLE

~~[illegible]~~

Type	Element Name	Common Name	State	Fed.	Townrang Sec	Date	Comments
Plant	CAREX [illegible]	[illegible] SEDGE	[illegible]				
Plant	POA ALSODES	GROVE MEADOW GRASS	[illegible]				
Bird	ARDEA HERODIAS	GREAT BLUE HERON	[illegible]				

[illegible]

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-141 January 1997

United States Department of the Interior / National Park Service

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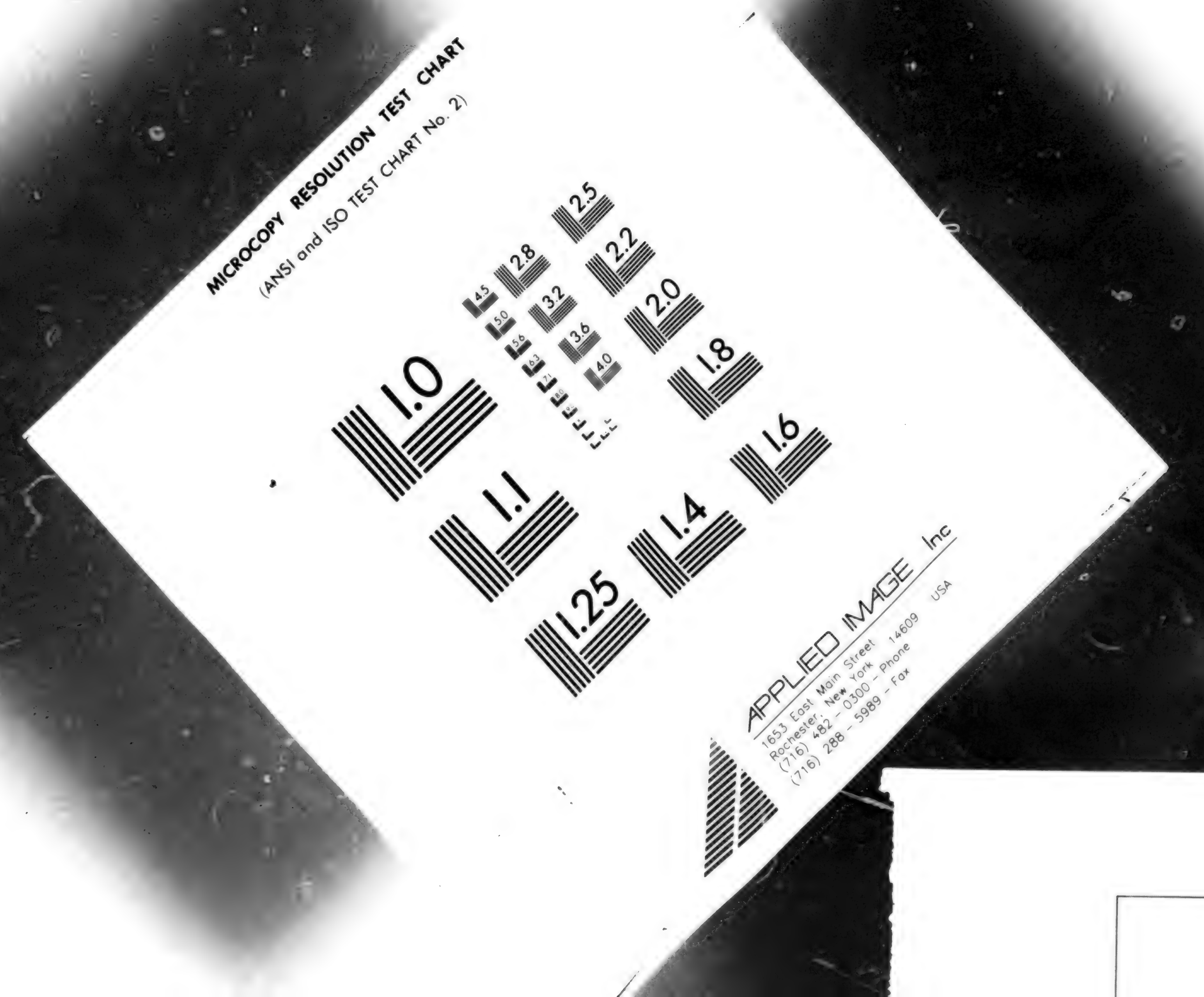
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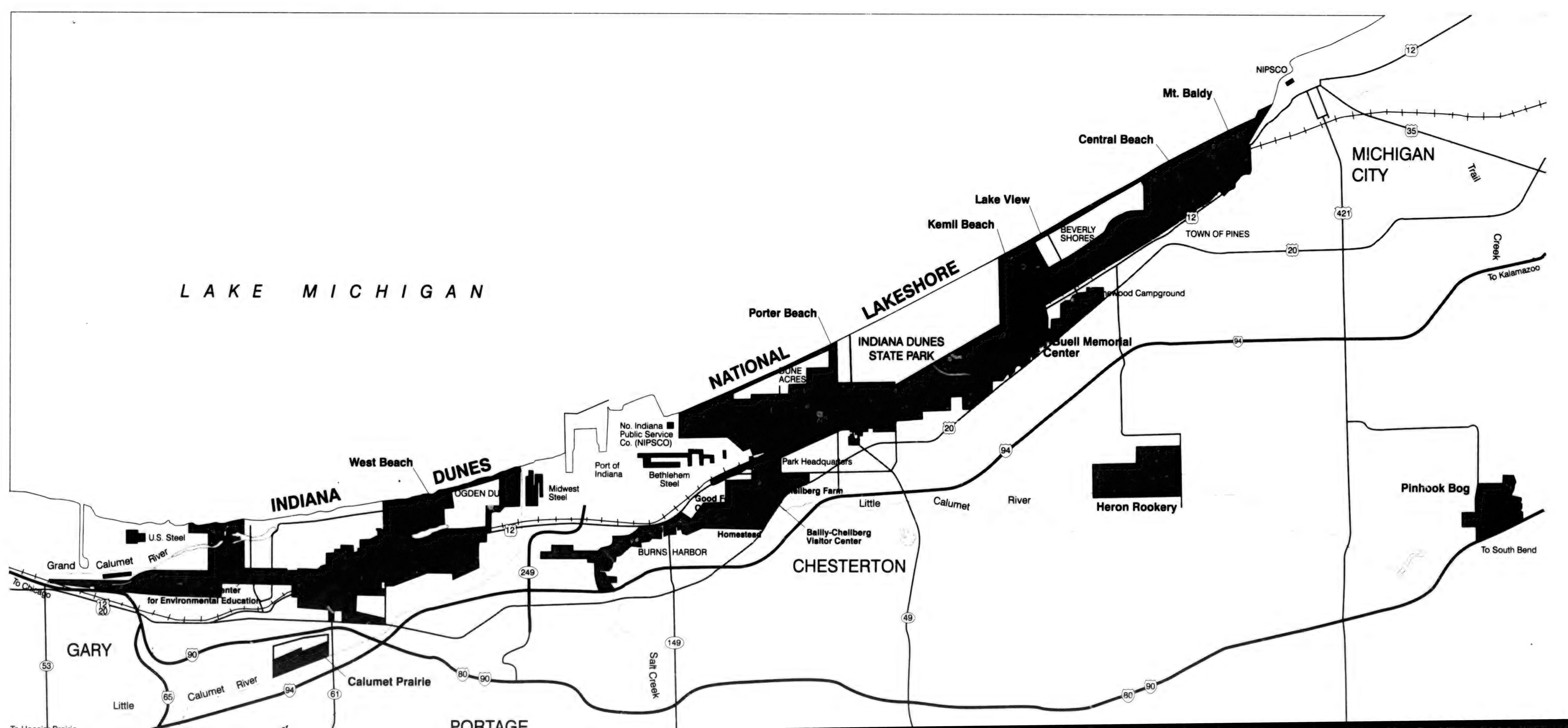
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Port of Indiana
Bethlehem Steel
Park Headquarters
Chellberg Farm
Little Calumet River
Heron Rookery
Pinhook Bog
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West Beach
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Midwest Steel
Good Fellow Club
Homestead
Bailly-Chellberg Visitor Center
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CHESTERTON
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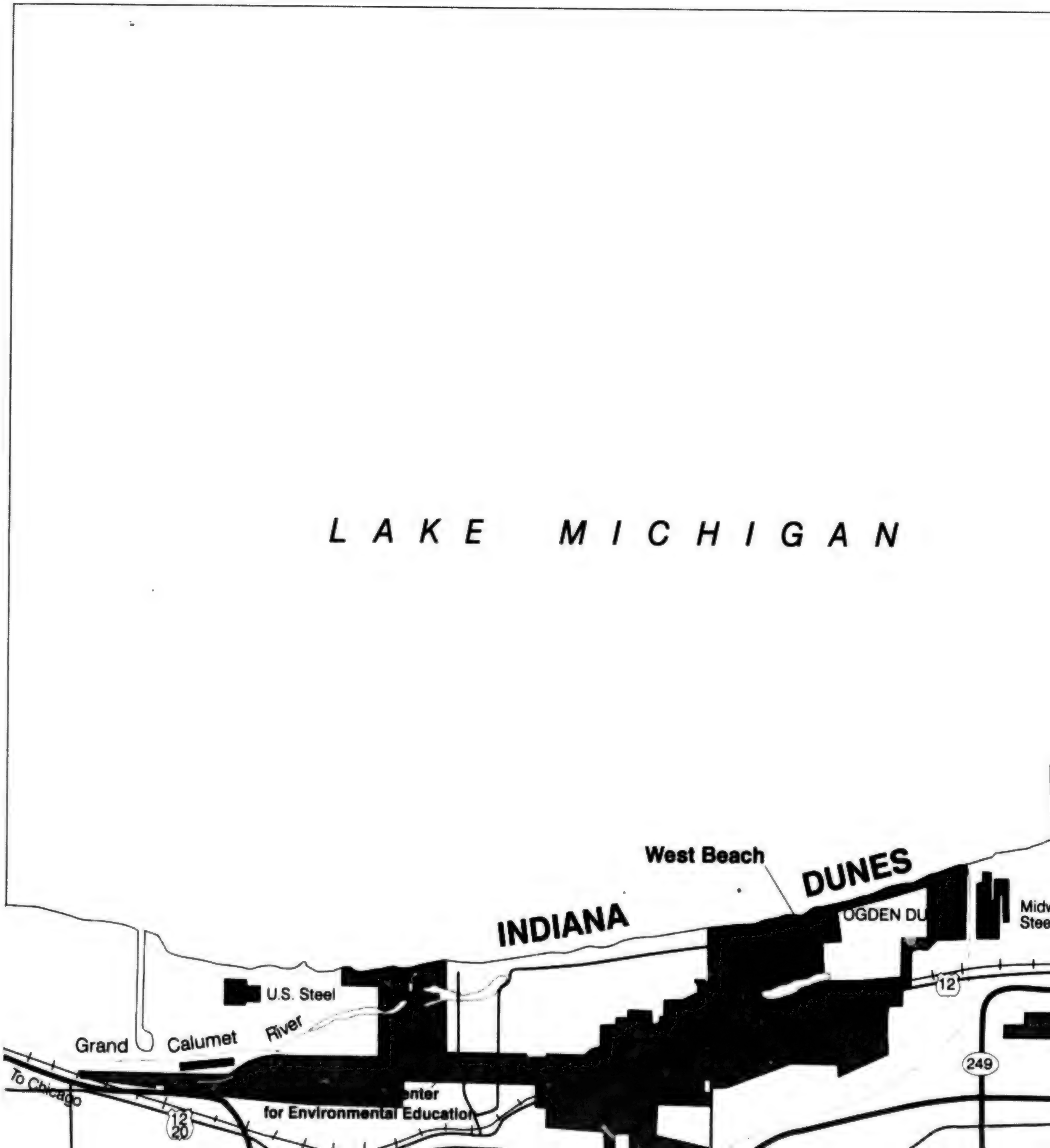
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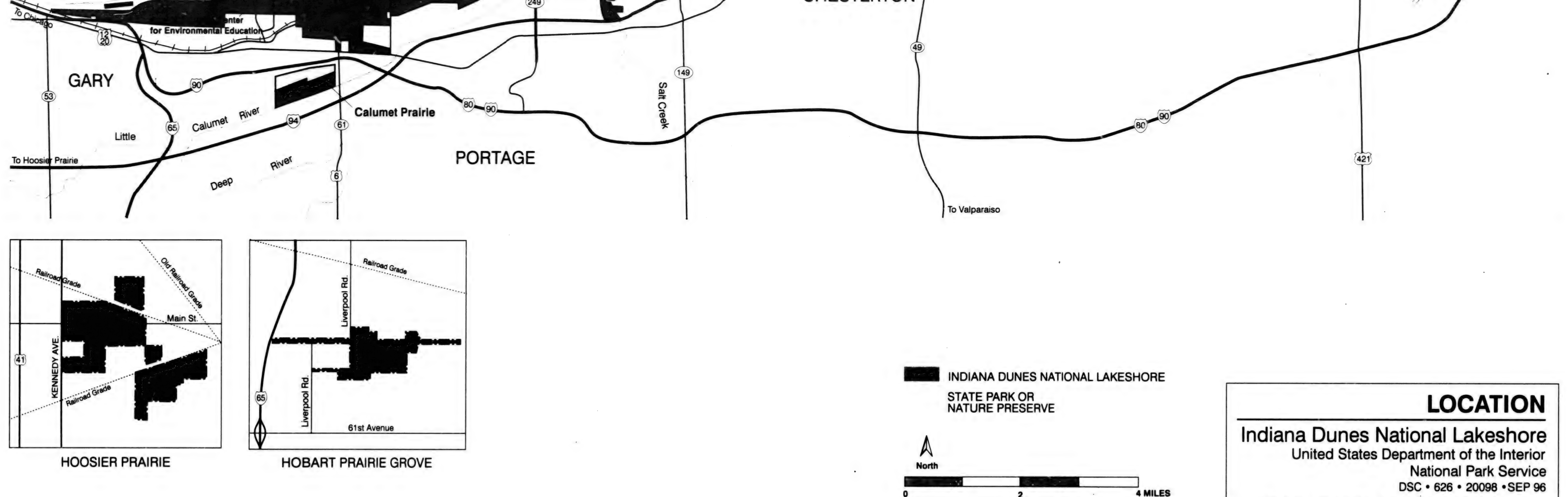

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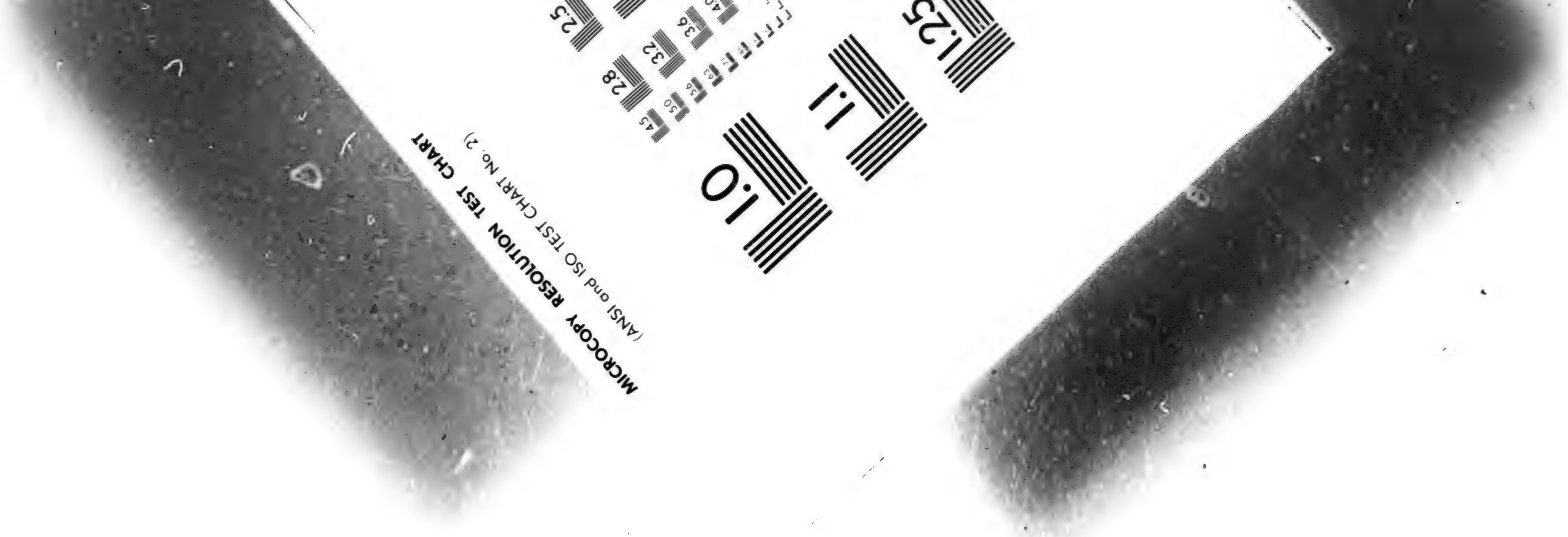
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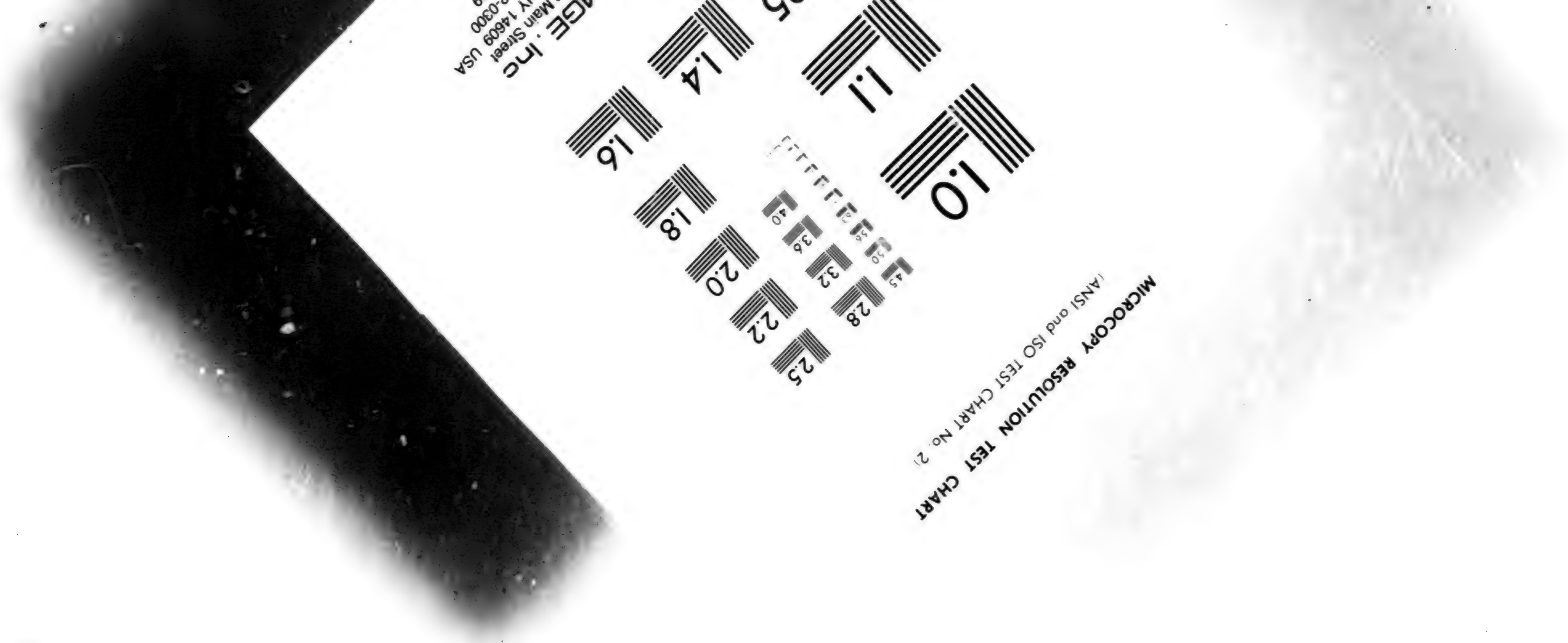
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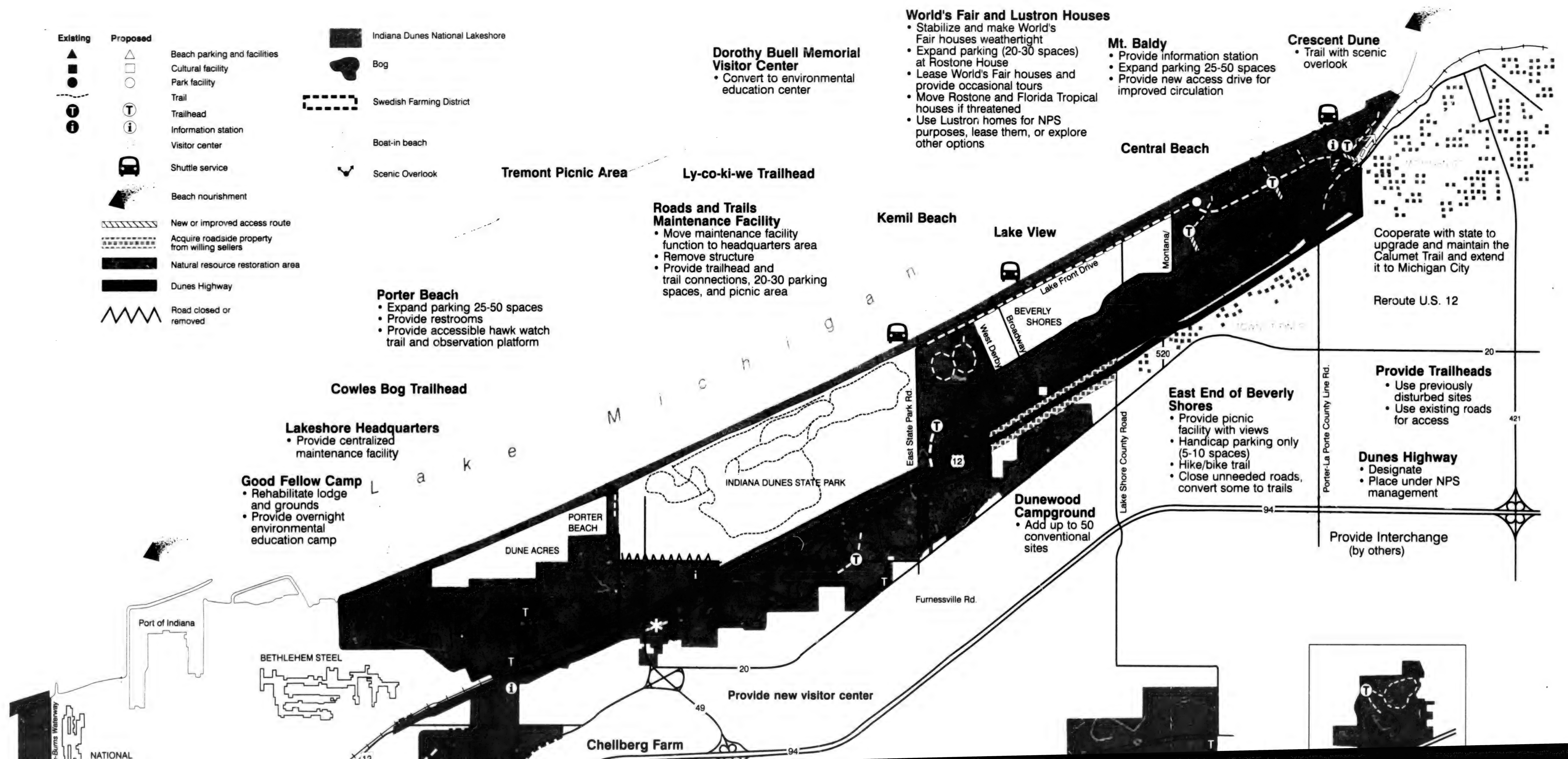
Existing
Proposed
▲ △ Beach parking and facilities
■ ☐ Cultural facility
● ○ Park facility
Indiana Dunes National Lakeshore
Bog
Dorothy Buell Memorial Visitor Center
World's Fair and Lustron Houses
• Stabilize and make World's Fair houses weathertight
• Expand parking (20-30 spaces) at Rostone House
Mt. Baldy
• Provide information station
Crescent Dune
• Trail with scenic



Dorothy Buell Memorial Visitor Center
- Convert to environmental education center

World's Fair and Lustron Houses
- Stabilize and make World's Fair houses weathertight
- Expand parking (20-30 spaces) at Rostone House
- Lease World's Fair houses and provide occasional tours
- Move Rostone and Florida Tropical houses if threatened
- Use Lustron homes for NPS purposes, lease them, or explore other options

Mt. Baldy
- Provide information station
- Expand parking 25-50 spaces
- Provide new access drive for improved circulation

Crescent Dune
- Trail with scenic overlook

Roads and Trails Maintenance Facility
- Move maintenance facility function to headquarters area
- Remove structure
- Provide trailhead and trail connections, 20-30 parking spaces, and picnic area

Porter Beach
- Expand parking 25-50 spaces
- Provide restrooms
- Provide accessible hawk watch trail and observation platform

Lakeshore Headquarters
- Provide centralized maintenance facility

Good Fellow Camp
- Rehabilitate lodge and grounds
- Provide overnight environmental education camp

Cooperate with state to upgrade and maintain the Calumet Trail and extend it to Michigan City

Reroute U.S. 12

Provide Trailheads
- Use previously disturbed sites
- Use existing roads for access

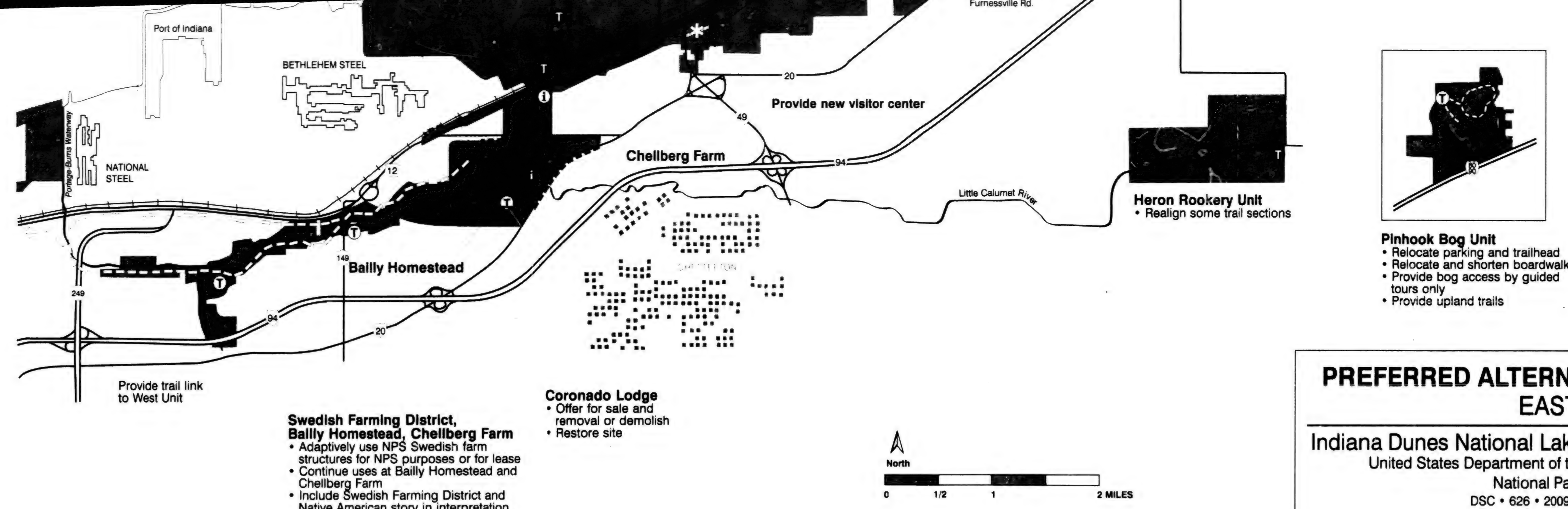
Dunes Highway
- Designate
- Place under NPS management

East End of Beverly Shores
- Provide picnic facility with views
- Handicap parking only (5-10 spaces)
- Hike/bike trail
- Close unneeded roads, convert some to trails

Dunewood Campground
- Add up to 50 conventional sites

Provide Interchange (by others)

Provide new visitor center



Provide trail link to West Unit

Swedish Farming District, Bailly Homestead, Chellberg Farm
- Adaptively use NPS Swedish farm structures for NPS purposes or for lease
- Continue uses at Bailly Homestead and Chellberg Farm
- Include Swedish Farming District and Native American story in interpretation

Coronado Lodge
- Offer for sale and removal or demolish
- Restore site

Heron Rookery Unit
- Realign some trail sections

Pinhook Bog Unit
- Relocate parking and trailhead
- Relocate and shorten boardwalk
- Provide bog access by guided tours only
- Provide upland trails

PREFERRED ALTERNATIVE
EAST UNIT

Indiana Dunes National Lakeshore
United States Department of the Interior
National Park Service
DSC • 626 • 20092A • SEP 96

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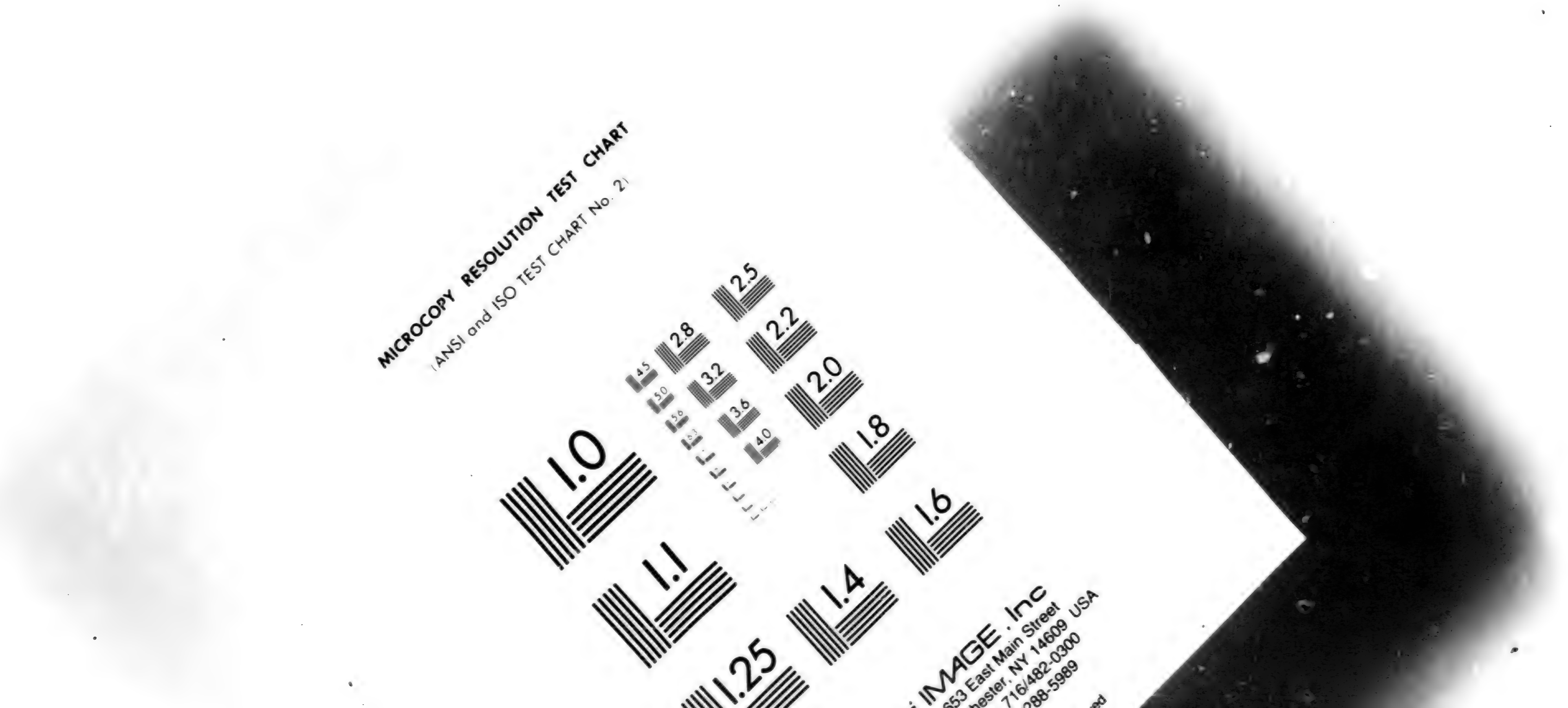
2


MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)
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2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
IMAGE . Inc
653 East Main Street
hester, NY 14609 USA
716/482-0300
288-5989

MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)
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1.1
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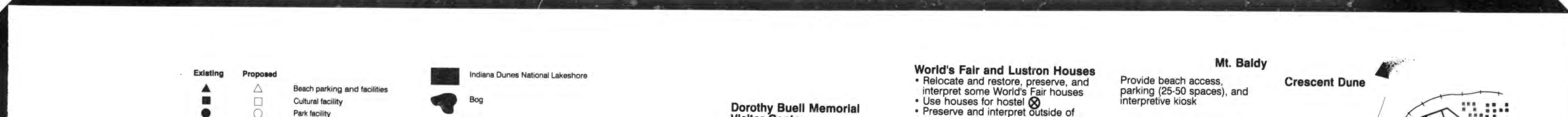
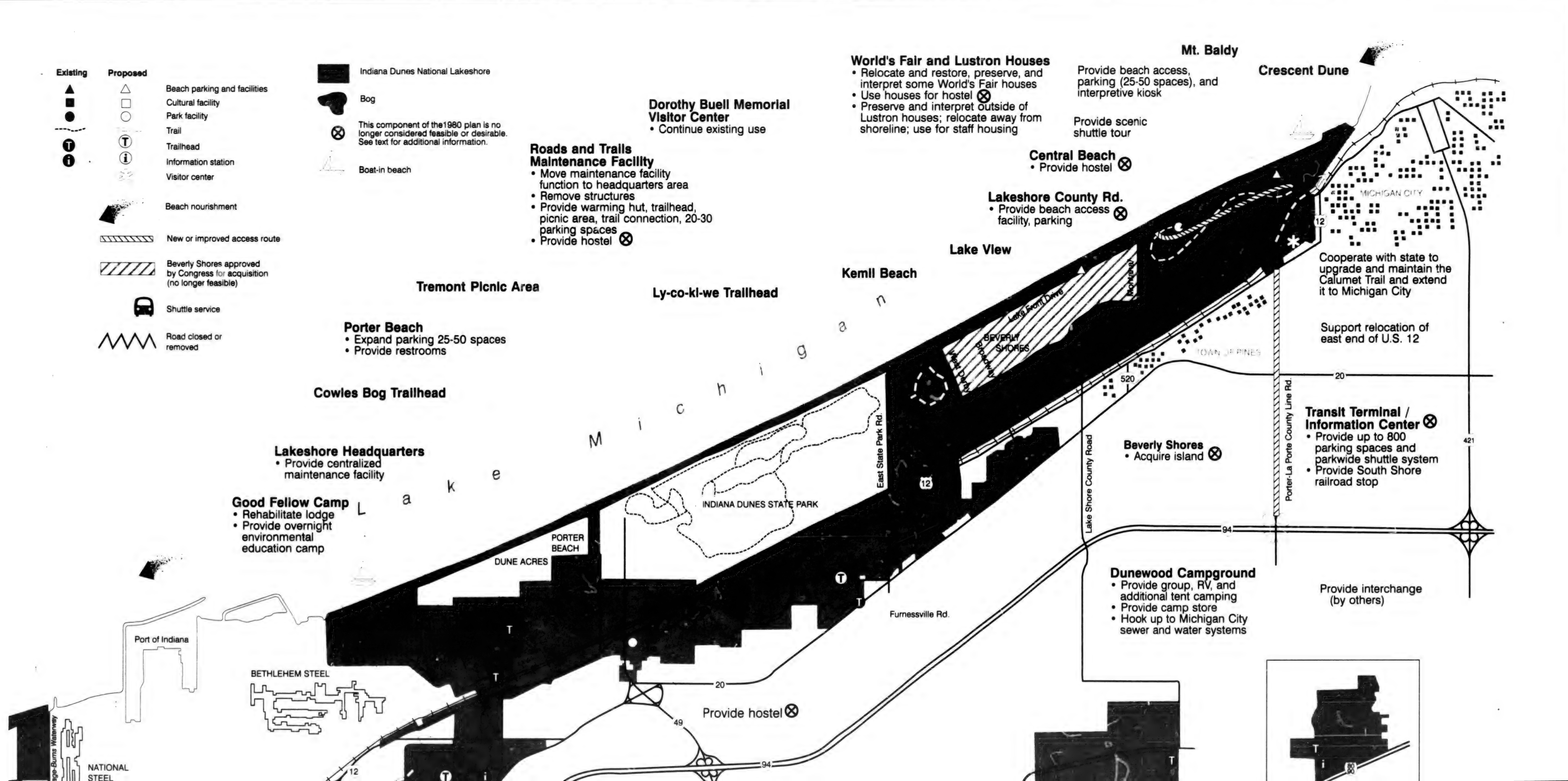
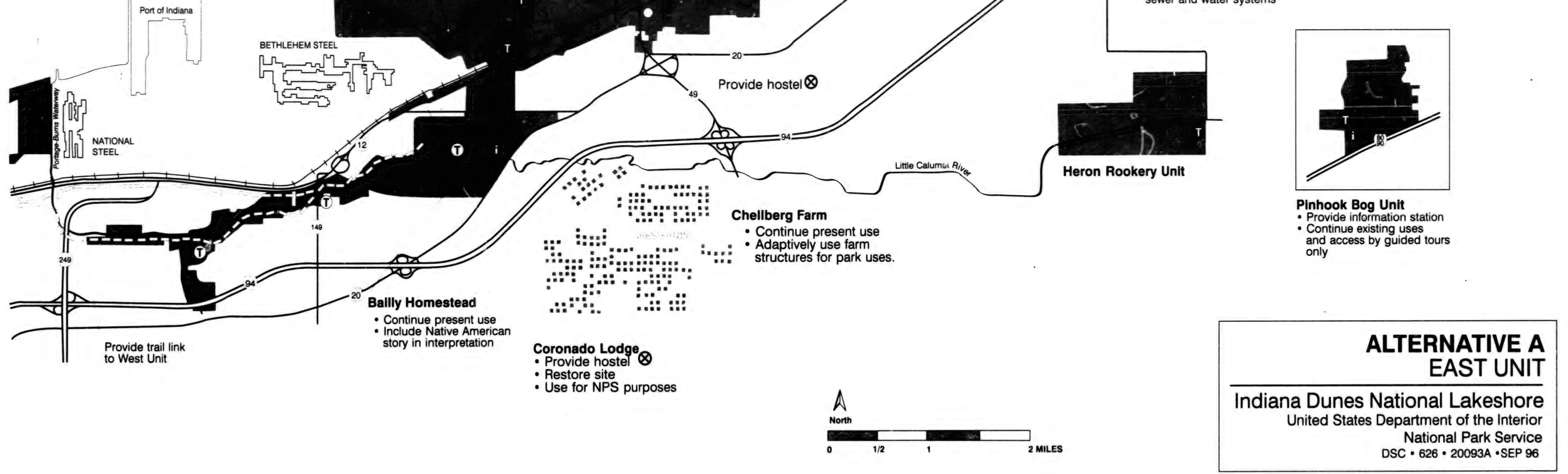

Existing
Proposed
▲ △ Beach parking and facilities
■ ☐ Cultural facility
● ○ Park facility
Indiana Dunes National Lakeshore
Bog
Dorothy Buell Memorial
World's Fair and Lustron Houses
• Relocate and restore, preserve, and interpret some World's Fair houses
• Use houses for hostel ⊗
• Preserve and interpret outside of
Mt. Baldy
Provide beach access, parking (25-50 spaces), and interpretive kiosk
Crescent Dune


Existing
Proposed
Beach parking and facilities
Cultural facility
Park facility
Trail
Trailhead
Information station
Visitor center
Beach nourishment
New or improved access route
Beverly Shores approved by Congress for acquisition (no longer feasible)
Shuttle service
Road closed or removed
Indiana Dunes National Lakeshore
Bog
This component of the1980 plan is no longer considered feasible or desirable. See text for additional information.
Boat-in beach
Dorothy Buell Memorial Visitor Center
• Continue existing use
Roads and Trails Maintenance Facility
• Move maintenance facility function to headquarters area
• Remove structures
• Provide warming hut, trailhead, picnic area, trail connection, 20-30 parking spaces
• Provide hostel ⊗
World's Fair and Lustron Houses
• Relocate and restore, preserve, and interpret some World's Fair houses
• Use houses for hostel ⊗
• Preserve and interpret outside of Lustron houses; relocate away from shoreline; use for staff housing
Mt. Baldy
Provide beach access, parking (25-50 spaces), and interpretive kiosk
Provide scenic shuttle tour
Crescent Dune
Central Beach
• Provide hostel ⊗
Lakeshore County Rd.
• Provide beach access facility, parking ⊗
Lake View
Kemil Beach
Tremont Picnic Area
Ly-co-ki-we Trailhead
Porter Beach
• Expand parking 25-50 spaces
• Provide restrooms
Cowles Bog Trailhead
Lakeshore Headquarters
• Provide centralized maintenance facility
Good Fellow Camp
• Rehabilitate lodge
• Provide overnight environmental education camp
Lake Michigan
MICHIGAN CITY
Cooperate with state to upgrade and maintain the Calumet Trail and extend it to Michigan City
Support relocation of east end of U.S. 12
Lake Front Drive
Montana
BEVERLY SHORES
Broadway
West Derby
TOWN OF PINES
520
20
12
421
East State Park Rd.
INDIANA DUNES STATE PARK
Lake Shore County Road
Porter-La Porte County Line Rd.
Transit Terminal / Information Center ⊗
• Provide up to 800 parking spaces and parkwide shuttle system
• Provide South Shore railroad stop
Beverly Shores
• Acquire island ⊗
94
Dunewood Campground
• Provide group, RV, and additional tent camping
• Provide camp store
• Hook up to Michigan City sewer and water systems
Provide interchange (by others)
Furnessville Rd.
PORTER BEACH
DUNE ACRES
Port of Indiana
BETHLEHEM STEEL
49
Provide hostel ⊗
NATIONAL STEEL
Burns Waterway
80 90



ALTERNATIVE A
EAST UNIT

Indiana Dunes National Lakeshore
United States Department of the Interior
National Park Service
DSC • 626 • 20093A • SEP 96

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MICROCOPY RESOLUTION TEST CHART
ANSI and ISO TEST CHART No. 2
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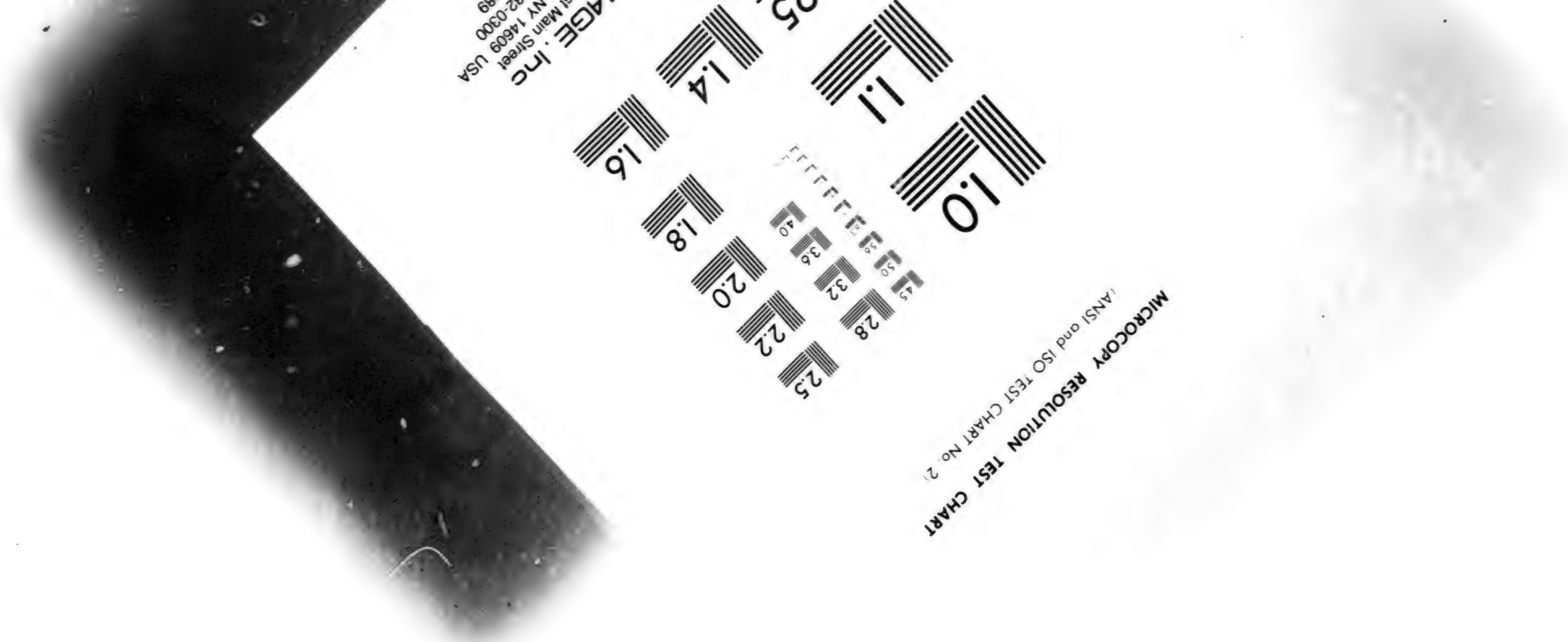
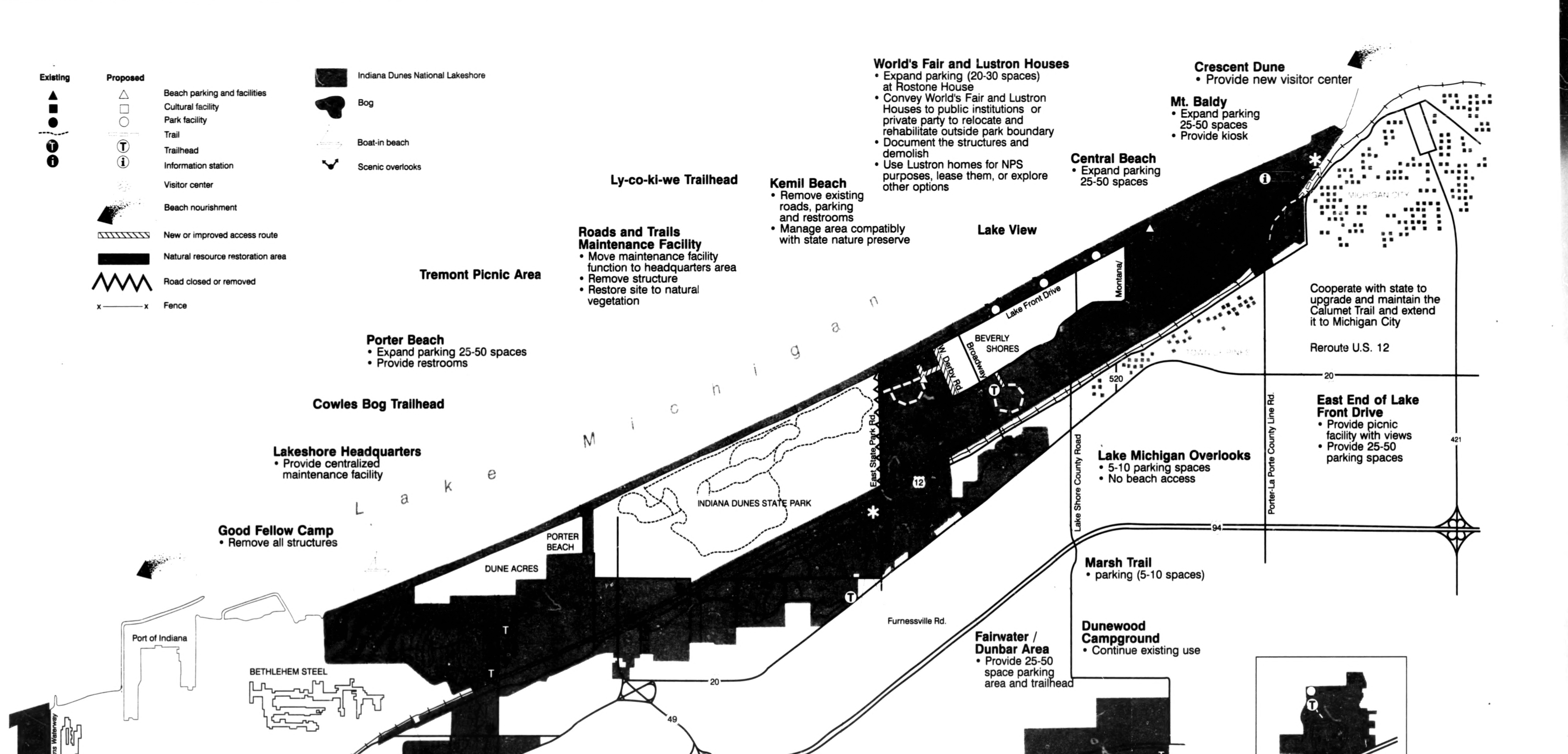
1.1

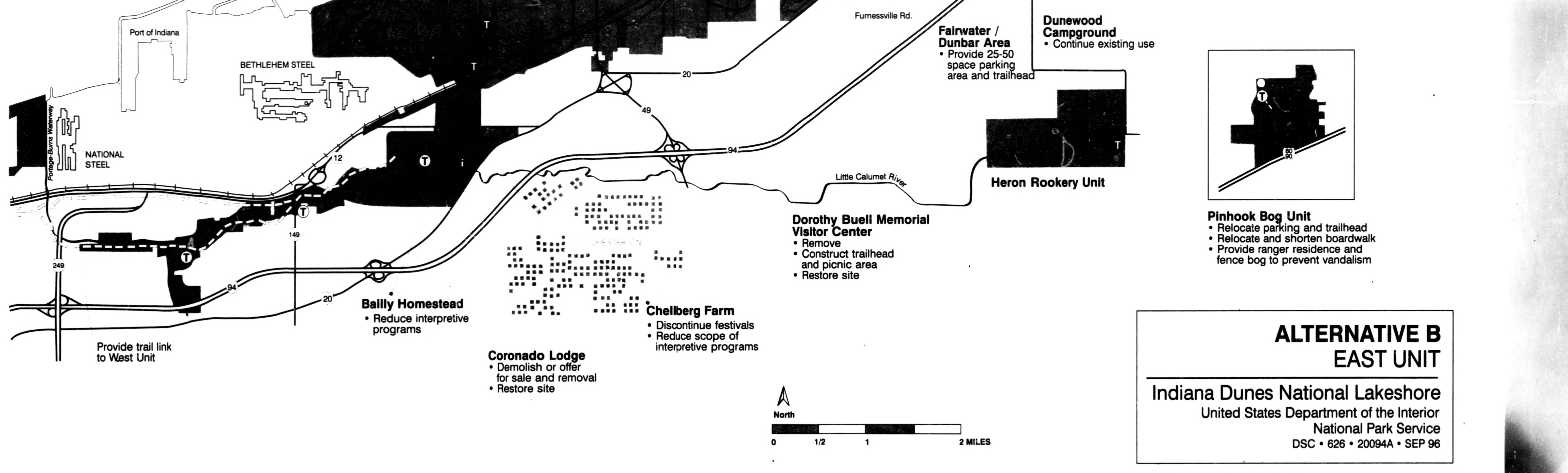

MICROCOPY RESOLUTION TEST CHART
ANSI and ISO TEST CHART No. 2
1.0
1.1
1.4
1.6
1.8
2.0
2.2

MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)
APPLIED IMAGE, Inc

MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)
APPLIED IMAGE, Inc

Existing
Proposed
Beach parking and facilities
Indiana Dunes National Lakeshore
World's Fair and Lustron Houses
• Expand parking (20-30 spaces) at Rostone House
Crescent Dune
• Provide new visitor center


Existing
Proposed
Beach parking and facilities
Cultural facility
Park facility
Trail
Trailhead
Information station
Visitor center
Beach nourishment
New or improved access route
Natural resource restoration area
Road closed or removed
Fence
Indiana Dunes National Lakeshore
Bog
Boat-in beach
Scenic overlooks
Lake Michigan
World's Fair and Lustron Houses
• Expand parking (20-30 spaces) at Rostone House
• Convey World's Fair and Lustron Houses to public institutions or private party to relocate and rehabilitate outside park boundary
• Document the structures and demolish
• Use Lustron homes for NPS purposes, lease them, or explore other options
Crescent Dune
• Provide new visitor center
Mt. Baldy
• Expand parking 25-50 spaces
• Provide kiosk
Central Beach
• Expand parking 25-50 spaces
Ly-co-ki-we Trailhead
Kemil Beach
• Remove existing roads, parking and restrooms
• Manage area compatibly with state nature preserve
Roads and Trails Maintenance Facility
• Move maintenance facility function to headquarters area
• Remove structure
• Restore site to natural vegetation
Tremont Picnic Area
Lake View
Porter Beach
• Expand parking 25-50 spaces
• Provide restrooms
Cowles Bog Trailhead
Lakeshore Headquarters
• Provide centralized maintenance facility
Good Fellow Camp
• Remove all structures
Cooperate with state to upgrade and maintain the Calumet Trail and extend it to Michigan City
Reroute U.S. 12
MICHIGAN CITY
Lake Front Drive
Montana/
BEVERLY SHORES
Broadway
W. Derby Rd.
East State Park Rd.
520
20
12
INDIANA DUNES STATE PARK
PORTER BEACH
DUNE ACRES
Port of Indiana
BETHLEHEM STEEL
T
49
Waterway
East End of Lake Front Drive
• Provide picnic facility with views
• Provide 25-50 parking spaces
421
Lake Michigan Overlooks
• 5-10 parking spaces
• No beach access
Lake Shore County Road
Porter-La Porte County Line Rd.
94
Marsh Trail
• parking (5-10 spaces)
Furnessville Rd.
Fairwater / Dunbar Area
• Provide 25-50 space parking area and trailhead
Dunewood Campground
• Continue existing use


Port of Indiana
BETHLEHEM STEEL
NATIONAL STEEL
Furnessville Rd.
Fairwater / Dunbar Area
• Provide 25-50 space parking area and trailhead
Dunewood Campground
• Continue existing use
Little Calumet River
Heron Rookery Unit
Pinhook Bog Unit
• Relocate parking and trailhead
• Relocate and shorten boardwalk
• Provide ranger residence and fence bog to prevent vandalism
Dorothy Buell Memorial Visitor Center
• Remove
• Construct trailhead and picnic area
• Restore site
Bailly Homestead
• Reduce interpretive programs
Chellberg Farm
• Discontinue festivals
• Reduce scope of interpretive programs
Coronado Lodge
• Demolish or offer for sale and removal
• Restore site
Provide trail link to West Unit
20
49
12
94
149
249
North
0
1/2
1
2 MILES

ALTERNATIVE B
EAST UNIT

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National Park Service
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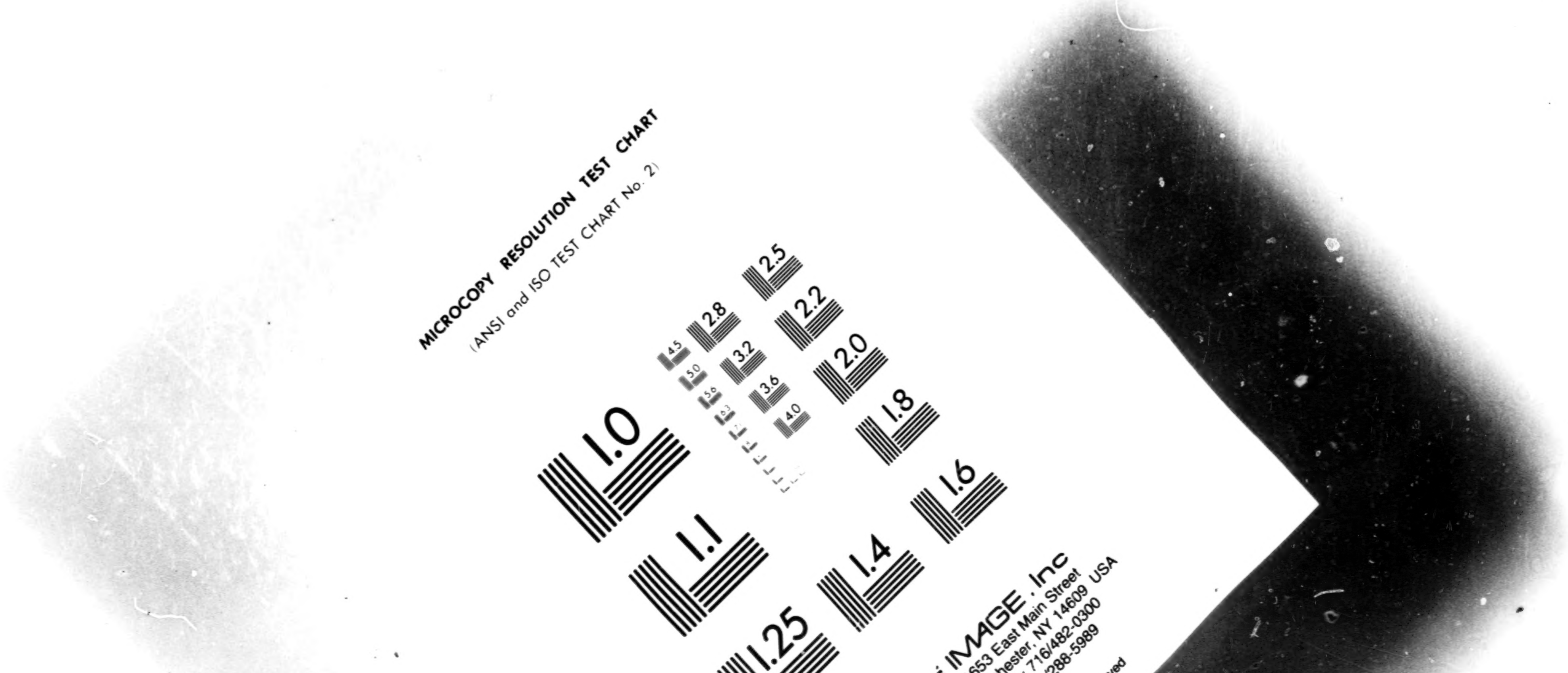
4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(ANSI and ISO TEST CHART No. 2)
1.0
1.1
1.25
1.4
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1.8
2.0
2.2
2.5
IMAGE Inc

MICROCOPY RESOLUTION TEST CHART
(ANSI and ISO TEST CHART No. 2)
1.0
1.1
1.25